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Urinary Calculi in the Horse and Dog*

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URINARY calculi must always be considered serious in any animal from the possibilities of painful and even fatal consequences they often entail. The subject is no new one in veterinary practice, and indeed interest in this question has existed from the commencement of an educated veterinary profession in this country, as may be seen by perusing veterinary literature for the past one hundred years.

I set up no claim to anything very original on this subject, but rather desire to introduce for your consideration a disease which is full of interest as regards diagnosis, effects, and treatment. A discussion on such a subject can hardly fail to be useful to all of us. To treat the subject of urinary calculi in general would require too long a time, and, even dealing with the horse and dog only, many points must be passed with brief mention. At the same time the problem of causation in the different animals is intimately related to the chemical reaction of the urine, and therefore differs considerably in herbivora, in which the urine is normally alkaline, and in carnivora, where it is normally acid. It is for this reason I have selected an example from each group.

The Urine

The urine is a watery solution of organic and inorganic substances which are being excreted from the body, the solution depending on definite chemical and physical conditions. In composition the urine of the horse and that of the dog differ greatly and must be considered separately. That of the horse is a more or less turbid, yellow, or yellowish-brown liquid, with a specific gravity of 1040. The turbidity is due to the presence of suspended (undissolved) calcium and magnesium carbonate, and the thick syrupy consistence is partly due to a large amount of mucin. The reaction is faintly alkaline, due to the presence of potassium carbonate (the form in which the vegetable acids, tartaric, citric, malic, etc., are excreted). The total daily amount is somewhere about ten pints. The chief organic constituents are urea (about three and one-half ounces daily) and hippuric acid, in health there is no uric acid. During an acute attack of fever, when the horse is eating no vegetable food and active metabolism is going on, uric acid is formed and excreted, for the animal for the time is carnivorous.

The chief inorganic substances are potassium and magnesium salts, chlorides, sulphates, carbonates, and phosphates. Phosphates are only present in comparatively small amounts in a horse's urine, and, in addition, there may be small amounts of oxalates. If normal horse urine be allowed to cool, and then the sediment be examined microscopically, it will usually be found to contain crystals of calcium carbonate and, less often, of calcium oxalate.

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Here, then, we have as obvious possibilities the precipitation and concretion of calcium carbonate, or earthy phosphates, and rarely of calcium oxalate. Uric acid and urates we do not expect to find as constituents of urinary calculi in horses.

The urine of the dog is normally acid in reaction when the animal is fed on a meat diet, due to the presence of acid sodium phosphate (sodium dihydrogen phosphate, NaH_2PO_4) and acid calcium phosphate [$Ca(H_2PO_4)_2$]. The specific gravity is usually between 1040 and 1050, and the fluid is generally light yellow and clear. The chief organic constituents are urea and the alkaline salts of uric acid in a dog properly fed on meat. Of the inorganic substances sodium is greatly in excess of potassium (the reverse of the condition in the horse), and the acid phosphates are well-marked constituents. Here the substances likely to be precipitated and form calculi are the earthy phosphates and the uric acid. A dog fed on biscuits for several days will pass urine which is neutral or even alkaline, and if such feeding is alternated with days of meat diet there is a frequent change of reaction of the urine which is very favorable to precipitation of inorganic salts.

Composition and Characters of Calculi

In the horse by far the commonest calculus is one composed of calcium carbonate or chalk. In color these stones are usually buff-colored, and have a studded, nodular, or irregular surface. If deposited in the bladder the shape is generally oval, whilst those laid down in the kidney are irregular, often looking like a gnarled tree root. Much less common are phosphatic calculi—either calcium phosphate or ammonium magnesium phosphate (triple phosphate). These are lighter in color and have a smoother surface. Frequently there may be found a calculus made up chiefly of carbonate, but partly of phosphate. Sometimes, too, there is a small admixture of calcium oxalate. The common chalk calculus of the horse is most usually single. Another form of deposit met with not infrequently in the horse is that known as the sabulous deposit—the bladder being filled in some cases with a sandy material, sometimes fine, sometimes coarse, and in irregular grains. The material is usually chalk, or a mixture of chalk and phosphates.

In the dog the commonest calculus is that composed of triple phosphate (ammonium magnesium phosphate). Such calculi may either be quite small and multiple—the common type giving rise to obstruction of the urethra—or large, remaining in the bladder and occurring either singly, or two, or sometimes three together. Of the small ones the shape is roundish, but may be irregular, and the surface is usually smooth. Of the larger ones the commonest shape is oval, and the exterior is slightly roughened or nodular as a rule, though quite smooth ones are found. Where two or more of these large stones are found in the bladder they are often faceted, the flattened or concave faces having been produced as a result of friction. Much less common are uric-acid calculi, and calcium oxalate ones are also rare. Of the very rare organic calculi made up of cystin, xanthin, tyrosin, etc., nothing need be said here. Ammonium urate is a rare concretion sometimes found.

Conditions Favoring Precipitation in Urine

1. Alteration of the Chemical Reaction.—As the urine of the horse cools the turbidity may also be noticed to increase; that is, more calcium carbonate (chalk) is thrown down. Further, if left to stand awhile, the urea becomes decomposed into ammonium carbonate by the action of the ubiquitous Micrococcus ureæ,

$$CO\begin{matrix}NH_2\\NH_2\end{matrix} + 2H_2O = (NH_4)_2CO_3$$

so that the urine becomes markedly alkaline and ammoniacal, and more chalk is again thrown down. Similarly, in the case of the dog, when urea is decomposed and ammonia liberated, there is at once a deposit of the earthy phosphates, viz., calcium phosphate and ammonium magnesium, or triple phosphate. In the living animal this condition is brought about most commonly as a result of bacterial invasion of the bladder or other part of the urinary tract. The causes of infection commonly operating are:

a. Soiling of the vagina after parturition, especially when metritis results. From the vagina organisms which easily gain access to the bladder.

b. Infection from the outside as by means of a catheter, either itself dirty or introducing septic matter from the urethra, and;

c. Infection from the kidney as in cases of tuberculosis or pyemia.

2. *Concentration of the Urine.*—The urine becomes concentrated in cases of high fever where all the secretions are lessened, after severe hemorrhage, when the animal has been sweating profusely, and in cases of diarrhea. The same happens when too little drinking water is given to the animal. In such circumstances salts tend to be thrown out of solution.

3. *Retention of Urine.*—The most important factor favoring the formation of calculi is retention of urine in the bladder from any cause. The urine remaining in the organ favors sedimentation, and, since the bladder is not frequently washed out, assists infection. Retention may be brought about by any obstruction, as, for example, an enlarged prostate due to hypertrophy or tumor formation, as is seen sometimes in the dog; or to stricture of the urethra, possibly caused by a former calculus having damaged the mucous membrane. Again accumulations and concretions of sebaceous matter and salts in the navicular fossa at the end of the urethra, or malignant growths of the penis, or paralysis of the bladder (bladder, rectum, and tail) will all bring about obstruction. In the dog the ingrained habits of cleanliness and infrequent exercise sometimes combine to cause retention.

4. *Presence of a Nucleus.*—Such a nucleus may be a blood-clot, some mucin, or epithelium, or renal casts, or inspissated pus. The common illustration of the fur in a kettle massing round a marble will serve to make the point clear. We have examples of the same action in the gradual growth of a thrombus inside a vessel, or, perhaps more nearly analogous, a growth of intestinal calculi, round a piece of metal or other foreign substance. There are many cases on record where foreign bodies have served as nuclei for urinary calculi. Sometimes it has been a piece of a broken catheter, or some instrument introduced maliciously, especially in the mare, and one particularly interesting case recorded by Mr. Hunting may be mentioned where a piece of stick some four inches in length was found in the bladder and had evidently come through from the pelvic flexure of the colon at some previous time. Again, a splinter of bone from a fractured pubis, or a parasite such as the *Eustrongylus gigas*, which may invade the kidney, will serve as a nucleus. Not uncommonly, one calculus may become the nucleus for a deposition of a totally different material. Uric acid may be surrounded by phosphates, or chalk and phosphates, or chalk and phosphates may be mixed together.

There are a number of cases where none of the above conditions can be definitely proved to exist, and here we must fall back upon:

5. *Nature of the Food or Constitutional Tendency.*—Let us take uric acid as an example. According to Halliburton, the percentage of this substance in the urine is increased by (*a*) Excessive meat diet and diminished oxidation; that is, want of exercise and fresh air; (*b*) pathological conditions allied to gout; (*c*) increase of white cells in the blood; for example, in leucocythemia (leucocytes contain nuclein which is allied to uric acid); and any increase of uric acid excreted is favorable to this deposition in the urine. Similar remarks may be made about the other calculi when the food or water is such as to provide an excess of their ingredients.

6. *Sex of the Animal.*—Probably on account of parturition the bladder of the female is more commonly infected than that of the male; but even when this happens the short wide female urethra does not favor retention or obstruction. On the other hand, in the horse (male) with a long urethra, having the navicular fossa at its extremity, and a prepuce which may be the very reverse of clean, obstruction is by no means uncommon. In the dog the presence of the os penis is a great factor in causing obstruction.

Effects and Symptoms

Now let us turn to consider the effects and symptoms produced by calculi. Here again we will only deal with the most important practical points. Renal calculi are not very common in either horses or dogs, and, when they occur are extremely difficult to diagnose. The symptoms are those of indefinite abdominal pain, often associated with some blood in the urine, but they may be so slightly marked as to call for no notice, and the calculus may only be discovered at the autopsy.

A calculus in the kidney is often the starting point of abscess formation and nephritis, and when such occurs an acute fatal termination will be the sequel sooner or later. If suppuration does not occur and the other kidney remains normal, the affected organ simply wastes and may become a mere shell of tissue containing stones.

Sometimes small calculi from the kidney pass down into the ureter and may be there obstructed. The obstruction is likely to occur either at the brim of the pelvis, or just where the ureter enters the bladder. In such a case the flow of urine from that kidney is prevented, the tube becomes widely dilated, the kidney itself enlarged and saccular, and on the occurrence of acute symptoms and pain a rectal exploration will often discover the dilated tube running down towards the pelvis. This condition is very rare and need not be expected often.

Much more common are vesical or bladder calculi, for here the urine collects and may stagnate so that sedimentation and precipitation are by no means uncommon. The symptoms are fairly characteristic. Frequent micturition pointing to some irritation of the bladder, sometimes the passage of blood, straining after passing urine, and a straddling gait are common, and if the urine be examined an excessive amount of solid matter is often found. Further, the urine may be ammoniacal or stinking, a condition which favors calculous formation. The diagnosis need not be in doubt in the majority of cases if a rectal examination is made. In the dog the urine may be retained and the bladder can be felt through the abdominal wall in a much distended condition. This, of course, only occurs where the vesical calculus is obstructed in the neck of the bladder so that urine cannot escape. In most cases the symptoms will continue, sometimes more sometimes less acutely, for a considerable time, until finally complete obstruction results. Calculi in the bladder of the horse are perhaps most commonly single. They may, however, be multiple and fairly often a sandy or sabulous material may almost fill the organ. The serious dangers of calculi in the bladder are:

1. The occurrence of cystitis and the spread of the infection up the ureter to the kidney so that pyelo-nephritis is caused, with a fatal termination.

2. Obstruction to the outflow, retention of urine, and rupture of the bladder, bringing about peritonitis, and again ending fatally.

Even where these more serious results do not follow, the irritation of the stone often results in a chronic thickening of the wall of the bladder, with more or less ulceration of its mucous membrane. Sometimes, however, retention causes such stretching of the walls that the mucous coat is pushed out in the form of sacculi between the network of muscular fibers. In these sacculi salts may be deposited and it is in this way that calculi encapsuled in the wall are formed. They are of some importance because of the great difficulty of their removal.

On the other hand, bladder calculi are often passed down into the urethra, and they may obstruct this tube partially or completely at various points. In the horse a common situation for the obstruction is the perineum, an inch or two below the anus, but the stone may rest anywhere in the tube right down to the external orifice. The latter, in fact, may be considered the second most common situation. In the dog small stones pass from the bladder and almost invariably become obstructed where the urethra passes into the bone of the penis, and when several stones are present a chain of them may block the urethra from behind this point right back to the bladder.

Any case of urethral obstruction is serious and urgent, for, if unrelieved, the animal will die either from retention of urine and uremic poisoning, or from rupture of the bladder. In these cases no urine can be passed, though frequent attempts are made. The dog evinces great pain, especially if the abdomen be palpated; and further, a distended bladder will then be discovered. In the horse, in addition to the pain and retention of urine, the obstructing body may cause a swelling quite evident when the perineum is examined.

Methods of Diagnosis

When suggestive symptoms have arisen there are various methods which can be adopted to determine the diagnosis. A physical examination should be made of the different parts of the urinary tract. A rectal exploration will indicate the conditions of the bladder and the presence of a stone, it will often reveal any obstruction of ureter, but will give little or no indication of the condition of a kidney. In the dog the kidney may be examined by using morphine and then palpating through the abdominal wall, whilst fairly definite symptoms pointing to kidney disease warrant an exploratory laparotomy.

An examination of the urine is of great value. The frequency of micturition, the amount of urine passed at a time, and its naked-eye characters help to form an opinion. If it contains blood, if it deposits a considerable amount of sediment containing mineral matter, and if its chemical reaction is more alkaline than normal, great support is given to the idea of calculus. The presence of pus is an additional confirmation and is determined by microscopic examination of the sediment from urine.

In the case of obstruction of the urethra inspection of the perineum may be alone sufficient to discover the cause, for the stone will be seen causing a swelling in that region, the urethra behind it being distended. An attempt to pass a catheter will likewise discover any obstruction in the urethra, and in the dog this method affords a diagnostic sign. A grating of the catheter against the rough stone is a very common indication of urethral calculus in the dog. In the mare or in the horse, after the operation of urethrotomy, a metal sound can be passed into the bladder, and this by contact with a rough hard substance determines the presence and to some extent the size of a calculus.

Some more modern methods of diagnosis may be used with advantage, for example, x-ray photographs in the dog. It is important to remember in this connection that calculi of different chemical composition will give shadows of very different density, the purely inorganic stones giving a dense shadow, whereas those composed of organic matter (uric acid, urates, cystin, etc.) are with difficulty seen. For stone in the kidney this method is usually the first in importance, although not so important for stone in the bladder.

In the mare or in the horse after urethrotomy it is possible to inspect the interior of the bladder by means of the cystoscope. With this instrument the orifices of the ureter can be inspected to see if they are equally patent, and the mucous membrane of the organ critically examined.

It is important to differentiate urinary calculus from several other conditions which may exist in the horse and dog. Irritation of the urinary tract with hematuria, frequency of micturition, and straining may be caused by poisons such as cantharides, but the symptoms either become gradually aggravated, causing the animal's death; or pass off in a few days.

Blood in the urine may also result from simple or malignant tumors in the bladder, papillomata not infrequently cause this both in horses and cattle. In attempting to distinguish, it must be remembered that a tumor in the bladder rarely obstructs the flow of urine, is felt to be softer on rectal exploration, gives no ring or grating with a metallic bladder stone, but that shreds or particles from the growth may be frequently discovered in the urine removed with a catheter. These points are generally sufficient to distinguish such a growth from calculus.

In the dog there are various causes of bleeding from the penis or vagina, which

may suggest an urinary calculus. The infective granulomata affecting the body of the penis or the vagina have both given rise to a diagnosis of stone in the bladder causing bleeding. Simple examination at once clears up the error. In the same way uterine hemorrhage may have to be distinguished from hematuria, but what little difficulty there is, is at once resolved by obtaining a catheter specimen of urine which is found to be free from blood.

Treatment

The treatment of urinary calculus has passed through many stages. In the early days of medicine it was commonly thought that these stones could be dissolved *in situ*. Two methods of solution have received much consideration:

1. By medicine given by the mouth. This method is now known to be useless. It fails for the reason that it is practically impossible to get the solvent drug into the kidney or bladder in the *form* required. Chemical processes in the stomach, intestine, and blood, change the agent given so that it becomes ineffective as a solvent in the urine. Further, in these cases where the solvent is excreted in a suitable form it is quite impossible for it to be sufficiently concentrated to have any appreciable effect on the stone. A solvent needs to be fairly strong and to act for a considerable time, and these conditions do not obtain in the cases we are considering.

2. By solvents introduced into the bladder.—This method was perhaps somewhat more reasonable. Here again, however, the method fails because the agent cannot be used in sufficiently concentrated form, or is not left in contact with the foreign body for a long enough period of time. It is obviously useless for stones in the kidney, and when the urethra is obstructed it cannot be applied.

3. Operation for removal of the stone.—So far as stone in the kidney is concerned, the condition is quite inoperable in the horse in the present state of our abdominal surgery. In a dog, if a stone in the kidney is diagnosed, the choice is between the opening of the abdomen, incising the kidney and removing the calculus, or destroying the dog. Under those circumstances operation is well worthy of a trial and presents no insuperable difficulty. The kidney substance is often thin and little cutting has to be done to extract the stone. Before suturing up the organ it is always well to explore the ureter to make sure that no obstruction is present further down the canal. An x-ray photograph materially helps the surgeon.

Vesical calculi may be extracted either whole or after crushing, depending on the size and the animal. In the mare it is surprising what large calculi may be extracted through the urethra, which is capable of very considerable dilatation. The animal must be anesthetized and the stretching of the orifice done gradually so as to fatigue the muscular fibers without rupturing them. Lithotomy forceps, sterilized, warmed and lubricated are introduced, the stone seized and gently withdrawn.

In the horse extraction whole can be practised after urethrotomy has been performed. The urethra is opened in the perineal region just below the anus, a sound passed into the bladder, and the condition of the calculus determined. The orifice is then stretched as much as possible and the stone carefully withdrawn in a similar fashion to that used in the mare.

The urethral wound generally does quite well without suturing and with comparatively little after-treatment, except that dictated by cleanliness.

Where the stone is too big for extraction whole, the operation of crushing or lithotrity may be attempted. The common chalky stone found in the horse is fairly readily crushed. Great care is, however, necessary to avoid including any of the mucous membrane in the jaws of the lithotrite along with the calculus. It is an advantage if a fair amount of fluid can be retained in the bladder while the lithotrite is being applied, for the reason that this lifts the mucous membrane out of the way. After crushing, the fragments are extracted with forceps or with a spoon, or by flushing out the bladder with warm boracic acid solution or other non-irritating simple antiseptic.

In the dog removal is best performed by opening the bladder above the pubis and an incision alongside the penis is the one used in the male, whilst, in the female, the median incision is employed. A point of some importance after opening the bladder is that sutures inserted to close the incision should not go right through the thickness of the wall. They should be inserted like Lembert's bowel sutures through the serous and muscular coats, leaving the mucous layer unpunctured. The reason is that sutures penetrating the bladder form a nucleus on which salts may deposit, and this, of course, should be avoided. The dog, if not too far gone, is a good subject for this operation and cases usually do well. It is only where retention and uremic poisoning have ensued that unfavorable results need be expected.

When the calculus is impacted in the urethra removal is not, as a rule, difficult. Sometimes in the horse and mare the mere giving of an anesthetic which relieves spasm will allow the stone to be gently moved down the tube. Should the stone be in the navicular fossa it may be extracted by hand without any cutting being necessary. Often, however, an incision into the urethra at a point where the stone is located is necessary, and following that little further need be done. The stone is gently withdrawn by means of a pair of strong forceps, the canal is examined to be sure that no further obstruction exists and the case will then usually go on to a successful issue. It is well to make sure that the bladder itself does not contain other stones likely to cause obstruction later on, any present should be dealt with at the same operation.

In the dog the urethra is almost invariably impacted just behind the bone of the penis. Sometimes when the animal is deeply anesthetized the offending stone may be expelled. More often the urethra must be opened. When this is done it will frequently be found that, posterior to the obstruction, a chain of small stones extends back to the bladder, and the bladder itself may contain a large number of small calculi, potential sources of obstruction unless removed. Flushing of the bladder should be repeated until this danger is overcome. The urethral wound heals as a rule without difficulty and the onset of stricture is not a serious or likely contingency. It is well to examine the urethra anterior to the incision, that is, along the bone and up to the meatus, for small stones may have located there. These should be expelled by a soft flexible bougie.

After Treatment.—After operation little need be done, except to attend to any wound that may have been made, and to see that urine does not excoriate the skin around. At the same time, the urinary tract should be rested as much as possible, the diet should be light, in the case of the dog, soups and milk only being given. In all cases laxatives or even purgatives are advisable and alkaline diuretics that flush out the kidneys and bladder are useful. Such sedatives as atropine and hyoscyamine are useful to prevent irritation, whilst antiseptics (the best of which is urotropine) serve to prevent or clear up infection.

Prevention of Recurrence.—Not much can be done to avoid recurrence of calculi, but remembering the factors predisposing to calculus formation, the diet should be regulated, exercise prescribed, at any rate, in the case of the dog, whilst cleanliness of the prepuce should be enjoined in the case of the horse. Any inflammation of the urinary tract, such as cystitis, must be looked upon as a likely cause of calculus and treated promptly, vigorously and thoroughly.

THE May number of VETERINARY MEDICINE is filled with good things for the profession. I note there are many excellent contributions to the journal, one of which is Dr. J. T. Seely's paper: "Some Observations on Our Ethics." There seems to be a great need for better ethics among the profession, even yet. While the price of the journal has doubled, the value has been more than doubled.

S. T. BROWN.

Elbert, Ala.

I AM more than pleased with the May issue of the AMERICAN JOURNAL OF VETERINARY MEDICINE.

GLENN E. PARSHALL.

Ramona, Okla.

THE May VETERINARY MEDICINE is all right glad to see it in its new dress. It is by far the bes veterinary journal published.

W. A. THOMPSON, V. S.

Rushville, N. Y.

The Veterinarian's Interest in Higher Education*

By E. D. HARRIS, D. V. M., Fargo, North Dakota
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THREE centuries ago there landed on the eastern coast of this country a little band of Englishmen who had for their distinct purpose the establishment of a community where freedom of thought, action and speech might be enjoyed. In the pursuit of these blessings they had severed their connection with the then known civilized world.

These sturdy pioneers were from necessity to a large extent self-sufficient in things material, mental and spiritual. They builded their own homes from the choice trees of the forest; they produced their own food and clothing; they ministered to their sick, and buried their dead. Their small beginnings enlarged, new hamlets were built, schools were established, churches organized, courts of justice provided for, and town meetings were arranged to formulate laws and regulations for the protection of both personal and property rights. Throughout this period of local progress there appears to have been a predominating idea of self-sufficiency and freedom from dependence on the mother country.

To a large extent they were a people unto them selves and cared little what went on outside their own commonwealth. As an instance of their faith in their own importance may be mentioned the establishment of a "cleared road, forty miles west from Boston, which, in all probability would be the western limit of civilization." This statement with its embodied idea prevailed in that little city for a few decades and almost for a century. There are even today some Bostonians who consider their little city the center of a universe somewhat greater than forty miles in diameter.

History records through the two following centuries the growth and development of a vast nation relying almost entirely on its own resources. In fact the history of this nation gives proof of the wisdom of self-development rather than of being dependent on outside nations. No other nation has enjoyed such rapid or widespread prosperity. The almost incomprehensible vastness of their agricultural regions, the unsurpassed fertility of their soil, their great mineral resources, their vast forests of choice building timber, all added impetus to an era of development that already exceeded that of any other nation. The results could scarcely be otherwise than a somewhat superficial development along any line. The needs of the times demanded extensive rather than intensive effort. This condition of affairs is quite evident throughout the entire history of American progress and development. It was often said in older countries that the Americans cared only for money-getting. In many ways this no doubt was true. In no other country were such fortunes amassed in so short a space of time.

Such conditions could not continue indefinitely. Over a century ago saner minds had begun to agitate the need of some sort of check to superficial progress. However, until there should come a natural pause, no change could be hoped for.

The development and upbuilding of the trades, the establishment of our widespread and varied industries, the multiplicity of our institutions of general, professional and industrial education, all bear the stamp of the spirit that predominated earlier steps along the lines of advancement. The outcome of this self-dependent, self-satisfying sort of progress has resulted in the upbuilding of a nation essentially peculiar unto itself. In some respects we have advanced beyond that of the mother country or of the fatherland. Yet through it all are found the earmarks of rapid progress to meet a crucial demand, and a disregard for the true value of many simple

*Read at annual meeting, North Dakota Veterinary Association, January, 1912.

details which seemingly could be dispensed with.

As a result of this speedy progress, much of the educational work of the earlier days and up to within the last half-century, was of a rather superficial nature. True there were students who, after completing the courses offered in this country, carried work in some of the higher universities of the older countries of Europe. These men were the exception rather than the rule, and their life work stands out preeminently above and beyond that of those from our own institutions. The leading men of those early days in all walks of life whether professional or industrial were largely of this general type and stamp. Hence it is not surprising that the majority of professional men of all classes were the product of institutions whose chief asset was that they would furnish their students with the desired credentials in the shortest possible period of time. In short, the shorter the course the more popular it became, and institutions dependent on popular support for their financial maintenance vied with each other in their bid for students, by eliminating branches or features undesirable to those desiring a degree by the short-cut method. The innate ingenuity, perseverance, push, and ability to override obstacles, the heritage of almost every true American boy, enabled him to hold his own and even forge ahead under the handicap of such insufficient preparation. The superficialness of the professionally educated men with whom he came in contact permitted him to thrive under such conditions. The education of the great mass of the common people was not sufficient to enable them to demand and recognize capabilities of the highest type.

As one extreme follows another just so must there follow a reaction, the groundwork of which had been gradually shaping and establishing itself.

Farseeing men in all lines of work were sounding the war-cry against the prevailing inferior system of education. Comparisons between the mushroom system of this rapidly developed country and the older and more substantial system prevailing in Europe were freely made and attention drawn to our lack of appreciation of preparatory education. The groundwork of most of our so-called scientific training was pronounced lamentably insufficient.

In the reaction which followed progress was slow but persistent. The "degree mills" fought hard and long but gradually submitted to the inevitable. Preparatory work or its equivalent was made the basis of entrance to all of our best educational institutions conferring a degree of recognized value.

All this was not evolved from the American idea alone. We find the entering wedges of European tactics, requirements and training. Leading educators spent much time in Europe studying its systems and great institutions preparatory to introducing such parts as were deemed advisable into their own much criticized educational system.

Not until within the last half-century has there been shown much tendency to draw from outside sources, ideas and patterns for the more substantial and greater improvement and advancement of our industrial, educational and professional interests. Advance along these lines has been especially rapid and widespread during the last quarter of a century. During this time there has been developed in all branches of general, industrial and professional education a demand for a carefully prepared groundwork or basic foundation for the scientific and technical training given in any of these lines. This change has been gradual but persistent and complete. It has come through the demand for higher education in all lines, from the organizations of labor demanding a higher wage rate, from financial interests demanding brains as well as dexterity in their employees, from the masses, who, having become aware of the advantage of preparatory work have demanded it in their professional servitors. It is the outgrowth of an enlightened and educated public demanding the delivery of the real goods instead of the spurious article.

Along no other line has so great an awakening occurred as that of agriculture. There was a time when it was thought that

"any fool could farm." (Possibly this was the idea in mind when my father advised me to continue on the farm.) Today this situation is reversed. In no other profession is a greater range of brain activity required than of the truly successful farmer in handling the diversified results of the present system of diversified farming. It is true that his early educational training may be somewhat limited but, with the opportunities for enlightenment within his grasp, forced by grim necessity to study these opportunities of enlightenment from the view point of experience, the conclusions deduced by the majority of these tillers of the soil are both valuable and practical.

From the families of these hard-working farmers, taught in the school of practical experience, comes a demand that his children shall be given a better opportunity for educational advancement than he himself enjoyed. To this end he plans and saves. At the same time he applies his acquired knowledge toward the improvement of his methods of tilling the soil, selection of seed grain, stock-breeding and the care of his crops of grain and live stock. Each takes on a greater intrinsic value and he is keener to note when anything goes wrong with his growing grain or farm animals. As he seeks for information regarding plant diseases from sources that he considers authentic and trustworthy, just so does he turn to an authority and trustworthy man should he need advice or treatment for his live stock.

Having access to numerous periodicals devoted to the promulgation of advice and methods in everything pertaining to his calling it is not surprising that he has learned to discriminate between the true and false, the trained and the untrained. It is true that he makes mistakes and is imposed upon but in the end his native sense of the eternal fitness of things will lead him into the right road from which he will not again soon deviate.

Perhaps some of you may wonder what all this has to do with "The Veterinarians' Interest in Higher Education." Briefly, it is this: The same conditions, environments and short-cut routes that prevailed in other lines of education have exercised a like effect on veterinary education in North America.

When this country was first settled veterinary education as such was in its earliest infancy. To those early settlers the professional treatment of domestic animals was an unheard of measure. A number of the more simple remedies were known but most of these were hand-me-down traditions of the village farrier. Veterinary education in America was an unknown quantity for more than a century after it had been established on the European continent, and almost two centuries after America's occupation by civilized peoples.

Veterinary education in continental Europe has from its earliest history, been under the auspices and favor of the general government. Financial support from state revenues, prestige arising from royal patronage, together with the respect and moral support conferred by all classes in those countries gave the early European veterinary colleges a prestige and reputation that could scarcely have been otherwise acquired. Men of the best veterinary talent existing were secured as instructors.

The value of a thorough preparatory training was recognized and such training required. The native patience of the people enabled them to accept the long period of training and foresee the benefits arising therefrom. There has never existed in continental Europe a school for higher education that was fostered by private enterprise or for private gain. English speaking nations have apparently monopolized that form of education. Only within the last half-century have they awakened to the benefits accruing to all forms of education from government support and control.

While the early veterinary colleges in Europe were originally designed for the instruction and training of men for army service, the opportunity for profitable service as private practitioners did not in any wise pass unnoticed. A prominent feature of the training of these early practitioners was that the standard of educa-

tion set for army veterinarians was likewise the standard for private practice.

Education in all lines had made substantial progress at this time and the value of preparatory work was recognized as of high value. This preparatory training became as a matter of course a fixed requirement for veterinary training. The amazing strides made by graduates from these schools during the last fifty years as compared with the work of those of less efficient training has demonstrated its value. Much of the preparatory work required in those early schools was given in their own institutions. At the same time practical work as assistants in various phases of work was required. Hence their graduate was really a trained man in the full meaning of the term.

In later years much attention has been given to scientific research in an endeavor to solve the many intricate problems that developed from a close and exhaustive study of the numerous disease conditions which were constantly being met. Hence a large proportion of the men whose names have been handed down as noted scientists or research workers in veterinary medicine are other than English speaking veterinarians As a rule the scientific discoveries in veterinary medicine by English-speaking veterinarians have not kept pace with those of other countries. Why this should be so we cannot say but surmise that they may have lacked the patient, plodding persistence that characterizes successful scientific research.

Veterinary education in the British Empire has not progressed as rapidly as would have been expected from its position and opportunities. Its first veterinary school dates back as a pioneer, but was of other than the continental type. It flourished from the first and had followers of the same type. Its offspring found a pleasant and profitable location in North America.

Attempts to transplant veterinary schools of the continental type and training did not meet with flattering success. The pioneer of this type appears to have followed the French school at Alfort.

As was to be expected that type which corresponded most nearly to the prevailing type of early American education proved most popular. Add to this the great prime factor of time and the strong demand for men of any, or practically no degree of training and skill, and we have the key to the early American system of veterinary training.

All early American schools were dependent on their popularity for their existence. The competition resulting could have but one result as regards the requirement for any preparatory training.

With the growth of the idea requiring some general preparation as a foundation for any form of scientific, general or industrial education, its influence must sooner or later be brought to bear upon the curriculum of institutions offering courses in veterinary medicine.

It can be easily seen that any early radical steps pertaining to the establishing of rigid entrance requirements of more than mediocre proficiency in the grades must be taken by those institutions having a financial support independent of popular attendance. The lack of a sufficient number of graduate veterinarians in a large portion of the country caused the shorter course schools to continue popular as they enabled their graduates to enter active practice after a very short period of training. The opportunities afforded for extra work, and work of a higher type than that of the regular course, enabled men of higher preparatory training, or those of stronger mental powers, if ambitious, to acquire much extra training, and to attain to a much higher degree of scholarship than that required for graduation.

A very large percentage of the leading veterinarians of America today are men whose early veterinary training was secured in schools whose curriculum fell considerably short of that now recognized as standard. Many of these men have yielded to the desire to study carefully some of the more recent discoveries in veterinary medicine and have taken postgraduate work at their alma mater or at some other institution. Others, and their name is legion, have kept pace with much of the progress of the veterinary world, and, adding to the experience gained through

successful practice, are today among the most valued and trustworthy of those who safeguard the health of our domestic animals.

During the last quarter of a century the progress made in methods of instruction, laboratory equipment, valuable textbooks, and above all the enormous strides taken in research work have rendered almost elementary the curriculum required for graduation in an American school previous to that time.

During that time attempts have also been made to introduce European instructors into several of our leading veterinary institutions. The majority of these attempts have not been satisfactory in every respect. The highly trained European veterinary student fails to understand or sympathize with the inherent characteristics of the American student. The adaptation of European methods to American ideas and American demands has done much and will do more to place American veterinary education on a higher plane than it has yet occupied.

During the next quarter of a century we may look for even greater progress and if the prospective veterinarian of that period would keep pace with the progress of the veterinary world he must needs have as his ground-work the best that the present day affords, and even that may be surprisingly insufficient.

On the past history of any school and its graduates we have no desire to comment. We do, however, wish to call attention to the unmistakable signs of the times.

The past history of veterinary progress in all American institutions will ever remain unsullied and revered. They had a mission to perform and how nobly they have fulfilled it their thousands of successful graduates are a living testimonial. All honor to their past.

Viewing the future of the veterinary field as related to the rapidly changing conditions in agriculture and animal husbandry leaves but one conclusion to be drawn. "The successful and respected veterinary graduate must possess as a ground-work more than a limited knowledge of the three 'r's.'"

A large percentage of the tillers of the soil in the near future will be men of high school or college training and a part of that training will be a practical knowledge of the proper use of many of the simpler remedies and treatments that now form in a large measure the equipment of the under-trained man. In every state in the United States and Canada, agricultural students are being taught the prevention and treatment of many diseases, which, though simple in themselves, yet form a large part of a rural practice. In addition to this they are taught much of what to expect and to require of a supposedly trained man. Theirs will be a patronage that must be reckoned with; a critical, an exacting and an influential one. It should also be a most satisfactory one. It should relieve the busy practitioner of much of the routine drudgery and minor details that add to the vexations of an already sufficiently vexation-burdened profession.

Legislation relative to veterinary practice and privileges is annually being enacted and as the lines are gradually more and more closely drawn the poorly trained man finds himself more and more in a class unto himself. It is not a far-fetched possibility that, within the next decade the legal requirements necessary to even be admitted to examination by a veterinary examining board may be beyond the possessions of the under-trained man.

The value placed upon a preparatory education is increasing at a surprising rate in every line of work and we may safely assume that the businesslike, intelligent, scientific farmer will make a distinction between a man thoroughly trained for his profession and one who has taken a short cut to a professional degree.

In passing we would call attention to the great lack of uniformity in the degrees conferred for the same amount of college work and also to the great variation in the amount of work required to attain to some definite degree. A radical readjustment of the value of conferred degrees is needed, the amount of preparatory and college work required for each should be the same. The various veterinary degrees as now con-

fe red by American schools have but little si nificance. As was suggested some time ag by a prominent veterinarian the degree o "H. D." might not be inapplicable to g duates of all American veterinary col- le es.

To all graduates of whatever school, we w uld suggest that a careful adherence to t e technic, principles and ideas taught by t ir alma mater, supplemented by all the a ditional reliable information that we c n obtain will do much to elevate our p ofessional standing in our community, a d possibly ourselves in our own estimation. Few of us remember all that we learned in school. Some things perhaps we may well forget. Keep in mind the fact that the veterinary profession has ever had a struggle to secure and maintain the recognition to which it should be justly entitled. Also bear in mind that the careless or unscrupulous work of a few unprofessional men may bring calumny upon a large number of conscientious and deserving members of that same profession.

There are today in this state, as in every other state men of the veterinary profession who are not given the credit that by right is theirs. In years past there have arisen in every newly settled country men possessed of a more than usual inherent taste for the care and treatment of disease amongst domestic animals. The absence of a trained man of the veterinary profession rendered the first-aid calls upon these men rather frequent. Experience bore the fruit of success and many of these men developed into really good men, who, by careful home study and keeping pace with the advance of the profession in their state have qualified themselves for practice. The advent of the graduate practitioner and legal requirements for practice has brought them to a higher plane of professional life, and today many of them are worthy of a place amongst men of higher training. Their success has resulted from an adherence to the maxim "Do the best you can; use what knowledge you have, and strive earnestly to acquire more." A single instance will suffice to illustrate my point.

A short time ago our attention was called to sets of charts for mallein and tuberculin tests. One set had absolutely nothing to show whether it was made on horses, cattle, sheep or hogs; whether made with mallein or tuberculin. The other set had each part filled out in detail and was in every requirement a complete record of the work done. Apparently the first man depended upon his degree and diploma to give reliability to his work. The second had neither of these credentials but his report showed unmistakably the attention given to details, and doubtless these are the qualities that have been important factors in gaining and maintaining the success that has crowned a conscientious and busy life.

May we not safely assume that intelligent farmers and stockmen recognize the improper application of the mallein or tuberculin test, especially when the technic for each is available to all and the latter is the subject of frequent discussion in all agricultural periodicals circulating among all intelligent farmers?

In closing this somewhat lengthy paper we desire to be understood as not criticising the past of any veterinary school or its graduates as such. We do criticize the student who knowingly enters a school that at best can only inadequately prepare him for the highest position obtainable in his chosen profession. We also question the true loyalty of any alumnus who supports his alma mater in maintaining a curriculum that affords anything short of the best training for future needs. To the thinking veterinarian there is no question of the inadequacy of the training given by many of our present veterinary colleges. Unless they conform to the requirements of the future their doom is as completely sealed as if they had already pulled down their pennant. True they will continue possibly for years but their future graduates will live to regret that they paid their good coin for that which satisfieth not.

May the future veterinarian be of the highest type physically, mentally and professionally. And above all else may he be a man in all that the term implies. May he be sufficiently generous that only the successes of the present day veterinarian will be remembered.

May the veterinary institutions of today read the handwriting on the wall and train their students for the future rather than for the past. We believe it possible and fully probable that in the next half-century the status of American education will be equal to and, in some things exceed that of any other continent. It has been one of the last to awaken to its true mission, but its progress, now that it has awakened, should be as marked during the next and succeeding generations, as that which has characterized its growth during the last quarter of a century.

With the experience of other professions as a guide we should graciously submit to the demand for thorough training and if need be serve seven years for our sheepskin, even as did Jacob of old serve seven years for his heart's desire, and too, may our love for the work be, like his, so great that the years will seem as but one.

Veterinary Biologic Therapeutic Agents*

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THE development of veterinary science has been phenomenal during the last few years. It is probable this rapid advancement is due to the fact that veterinary knowledge has been enriched by the application of the principles of the closely associated science of bacteriology. The most rapid advancements in general medical science have been along the lines of immunity. Concurrent with the development of the theories of immunity there have been produced many biologic products that have proven very valuable therapeutic agents.

What Constitutes Immunity

Immunity is an increased resistance to disease, and may be inherited or acquired. Inherited immunity is an inherited resistance to disease and is positive and active. Acquired immunity on the other hand is not absolute, for this acquired resistance may be overcome by markedly depressing influences and thus an animal that has an acquired immunity may become infected and die. For example, a man may have acquired an immunity to smallpox but by long continued exhaustive labor, undue exposure to inclement weather, or by malnutrition, this immunity may be suspended and the man contract smallpox. This is equally true of calves immune to blackleg, hogs immune to hog cholera, and so forth. Acquired immunity is either active or passive.

Active acquired immunity is a condition in which tissue activities or products of the animal body are responsible for the increased resistance. Passive immunity is a condition in which the increased resistance is due to antibodies that have been artificially introduced into the animal. Active immunity is of longer duration than passive immunity. Active immunity is the result of production in the animal body of bactericidal substances, opsonins, antitoxins, and perhaps some other thus far unnamed substances. Passive immunity is due to the introduction into the body of a serum containing bactericidal substances, antitoxins, opsonins, and probably other substances.

Active immunity may be acquired by having the disease and recovering, by the use of small doses of virus, vaccine, bacterin and toxin. An active acquired immunity that results from having the disease is observed in the hog that has recovered from cholera, the calf that has recovered from blackleg, the mule that has recovered from anthrax, and in the animal that has recovered from the bite of venomous reptiles. At the present time, virus is not ordinarily used in the production of immunity, unless it is in the immunization of cattle against tick fever.

*Read at the annual meeting of the Texas Veterinary Medical Association, Fort Worth, Texas, March, 1912.

Active acquired immunity produced by vaccines is obtained by the immunization of animals against anthrax, cattle against blackleg, and man against smallpox. An active acquired immunity is produced in the immunization against any disease caused by the bacteria of the colon-typhoid type, as typhoid fever, dysentery, colon infection, and a large number of the diseases produced by the pyogenic organisms. The introduction of toxins for the production of active acquired immunity is not used at the present time, except in the immunization of man and animals against the venom of poisonous reptiles, castor bean, and so forth.

From the foregoing discussion it may be noted that the veterinary biologic products that are used are the production of immunity in animals may be discussed in three groups, namely—vaccines, bacterins, and serums.

Vaccine

A vaccine is an attenuated virus. They are prepared by subjecting the virus to some unfavorable conditions, as variation from the optimum temperature, moisture, light, or nutritive requirement for variable lengths of time. Introducing vaccines is termed vaccination. In some cases two or more strengths of vaccine are employed. Action of vaccine depends upon the production of a mild form of disease, after which the vaccinated animals are immune. Vaccines should be used as preventatives and not as curative agents. The exact mechanism of vaccination immunity is due in some instances to opsonins, but probably more frequently to the production of bactericidal substances. The principal vaccines used in veterinary practice are blackleg vaccine, anthrax vaccine, bovovaccine, antirabic vaccine, hog-cholera vaccine, and fowl-cholera vaccine.

Blackleg vaccine is one of the oldest and most reliable of the biologic therapeutic agents. It is prepared from the affected muscle of an animal which has died of blackleg. The attenuation is accomplished by heating the muscle to a fixed temperature for a definite period of time. This vaccine is dispensed as a powder, pill or thread.

Anthrax vaccine has been in use for the last thirty years. This vaccine is prepared by subjecting bouillon cultures of the Bacterium anthracis to a temperature of 42° to 43° C. for several successive days. This vaccine is dispensed as a liquid, dried and in thread form. It has been found to diminish the mortality from anthrax in anthrax infected regions to about five percent in cattle and ten percent in sheep, though some very disastrous results have been reported from the use of improperly prepared anthrax vaccine.

Bovovaccine, of von Behring and Pearson, has been on the market for the last few years. This is prepared from the bacterium tuberculosis, which is usually of human origin. There seems to be little doubt but what this vaccine does increase the resistance of some animals to tuberculosis, but the results thus far have not been uniform and unless the methods of its preparation and administration are simplified, this agent will probably not assume a very prominent role in veterinary biologic therapeutics.

Antirabic vaccine. This vaccine was first used by Pasteur in 1885. Although it has been used for many years for the prevention of rabies in man, it has been used only for the last few years in the prevention of rabies in animals. Its use by veterinarians has been made possible by its preparation in a form that can be sent to the practitioner at points remote from the laboratory. Antirabic vaccine is prepared from the spinal cord of rabbits that have died of rabies as a result of inoculation with fixed virus. The cords are attenuated by desiccation at a low temperature. Dr. Nisbet, of the American Biologic Company, of Kansas City, has treated nine horses, three mules, and five dogs since January 1, 1911. This vaccine is introduced subcutaneously, the first dose being injected into the cervical region and each succeeding dose a little further posteriorly, the last dose being injected in the flank. Twenty-one doses are usually given, three doses being given the first day, two the second and one each for the succeeding sixteen days. Thus far the use of the antirabic vaccine in the

prevention of rabies in man and animals that have been bitten by known rabid animals has been very successful and this vaccine is of inestimable value in the control of rabies.

Hog-cholera vaccine. At least two forms of hog-cholera vaccine have been used. The Bruschettini vaccine, an Italian product, has been used rather extensively in the United States, but its value as a therapeutic agent is extremely doubtful. In fact the Bureau of Animal Industry has reported that it has practically no value. King's hog-cholera vaccine, which is prepared by a few hours' residence of the virus of hog cholera in the blood of the horse, has not thus far been placed on the market. If this vaccine is perfected, and proves to be efficient, it will be a large factor in the control of hog cholera.

Fowl-cholera vaccine is prepared and has been used rather extensively in Europe. It has had limited use in America. It is an attenuated bacterium avisepticus.

Bacterins

A bacterin is a preparation containing dead bacteria. These agents were first used by Wright, of London, in the treatment of human tuberculosis. The writer has had considerable experience with bacterins in the treatment of suppurative processes, particularly in equines since 1906. Bacterins, generally speaking, are of two types, namely: autogenous and stock bacterins.

An *autogenous bacterin* is a bacterin made from the discharges of the animal to be treated.

Stock bacterins are prepared from pure culture of the causative organisms.

Bacterins are prepared by destroying the bacteria, either by heat or by some disinfectant. The therapeutic value of bacterins is dependent upon the production of opsonins in the animal body. Opsonins stimulate leukocytes in the destructuon of bacteria, or they paralyze or stupefy them, thus rendering them more susceptible to leukocytic action. Thus far, the diseased conditions of domestic animals, caused by pyogenic staphylococci, streptococci, pneumococci, and the bacillus communis, have been successfully combated by the use of bacterins.

All bacteria that contain endotoxins stimulate the animal body to produce opsonins when the endotoxins are eliminated. It has been quite definitely shown that staphylococci and streptococci produce different endotoxins and therefore the bacterins of each is specific. Most biologic concerns prepare a polyvalent stock bacterin that is a combination of streptococci and staphylococci. The colon bacterin has been successfully used in many cases of bacillus-coli-communis infections.

Recently it seems that a combination of staphylococci, streptococci, and the Bacterium bronchi canis makes a very efficient prophylactic agent against canine distemper. Bacterins when properly used are preventive and curative in action. The value of bacterins has been over-advertised by some but they are of considerable value when properly used and bacterins are destined to be one of the staple biologic therapeutic agents.

Serums

The term serum is employed to designate the liquid portion of the blood. It contains some substances or substances that are antagonistic to bacteria or bacterial products. The active principles of a serum are antitoxins, bactericidal substances, opsonins, agglutinins, precipitins and probably some other unnamed substances. Serums are preventive and curative in their action. They are specific, that is, they cannot be used interchangeably.

Antitoxin serums are prepared by the successive injections of increasing quantities of toxins into the animal body. The horse is most frequently used in the production of antitoxin. The most efficient antitoxin serum on the market for veterinary use at the present time is the tetanus antitoxin and this is efficient only as a preventive agent.

Bactericidal serums are of therapeutic value and may contain several substances. Their active principles are chemical agents that are destructive to bacteria. They usually produce their action by disintegration of the microorganism. Bac-

tericidal serums are produced by successive injections into the animal body of bacteria, either dead, attenuated or in a virulent state. The value of anti-anthrax serum depends upon the bactericidal substances it contains.

Opsonins are probably products of muscular tissue. These agents either stimulate leukocytes or they are bacterial depressants. There is probably no therapeutic serum employed for the benefit gained from the contained opsonins. The therapeutic value of *agglutins* and *precipitins* is not known.

Antihog-cholera serum is an agent that has been successfully employed the last few years in the control of hog cholera. This product was first prepared by Dorset, McBride and Niles. It is produced in hogs by repeated injections of increasing doses of virus. The exact substance in hog-cholera serum has not been determined, in other words, it is not known whether it is antitoxic, bactericidal or opsonic.

Antirinderpest serum is an agent that has been successfully used in some countries in the control of rinderpest. It is prepared by simultaneous injection into an animal of one Cc. of virulent blood and 50 Cc. of antirinderpest serum. This is followed up with a second large injection, either of virulent blood or of bouillon culture containing large quantities of the product of the rinderpest virus. It is not known what property within the serum gives the immunity.

Antivenomous serum is an antitoxin serum prepared by hyperimmunizing an animal by successive injections of venom. This serum has not been used extensively in veterinary practice, but there is no reason why it should not be more generally employed.

It is probable that some other products should have been discussed, but they have been omitted because of a lack of positive data concerning their preparation and use. There is now on the market a so-called *influenza antitoxin*. It is the blood serum obtained from a horse which has an immunity to the so-called acclimation or shipping fever. The clinical reports of the value of this antitoxin are difficult to interpret. Thus far no one has identified any antibody and some authorities doubt the presence of any immunizing substance in the product.

Antistreptococci serum and *streptococci antitoxin* are advertised by some biologic manufacturers. Streptococci do not produce a true bacterial toxin, at least not more than a trace, and if the substances advertised have any therapeutic value, it is not of an antitoxic nature, in fact most authorities concur in condemning these products as therapeutic agents. *Antistrangles serum*, according to the descriptive pamphlets, is a polyvalent serum, is prepared in the horse by repeated injections of various streptococci. The therapeutic value of this product is doubtful.

A Simple Method of Purifying Water*

By G. G. NASMITH, M. A., Ph. D., Director of the Health Laboratories of the City of Toronto, Canada, and R. R. GRAHAM, M. B., Assistant Chemist, Board of Health, Toronto, Canada

TWO years ago the first system for continuously purifying a municipal water supply by means of chlorine in the form of calcium hypochlorite was installed in the United States, the amount of available chlorine being 0.3 parts per million parts of water. The success of this method for one year has established its efficacy, and similar plants are now being installed at various other places. The method is so cheap, so efficient, and the agent used so harmless, that there would seem to be a great field for its usefulness in this and other countries. We have shown that 0.3 parts of chlorine in a million parts of water, or roughly, one pound of chloride of lime to a million pounds of water (500 tons or 100,000 gallons) will not only destroy typhoid and colon bacilli, but prac-

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tically all bacteria in water except a few spore formers.

It is a valuable means of sterilizing water because chloride of lime may be bought almost anywhere, is very cheap in the infinitesimal quantity used, is not only absolutely harmless, but leaves no taste in the water, and with a few directions may be used by anyone to render an infected water safe for drinking purposes.

The writers have worked out a simple method which can be used by miners, prospectors, or campers in Northern Ontario, or elsewhere, to purify immediately and on the spot any water which may be dangerous to drink. For armies in the field such a method will prove invaluable, for every soldier could easily carry a couple of ounces of the chloride of lime and sterilize his own drinking water; hence the experience with enteric fever in South Africa need never be repeated.

The method is as follows:

(1) Take a teaspoonful of chloride of lime, containing about one-third available chlorine, and remove the excess of powder by rolling a pencil or other round object along the top of the spoon, or by flattening it with a penknife blade, so that the excess will be squeezed off.

(2) Dissolve the teaspoonful of chloride of lime in a cupful of water, making sure that all lumps are thoroughly broken up, and to it, in any convenient receptacle, add three more cupfuls of water.

(3) Stir up the mixture, allow to stand for a few seconds in order to let any particles settle (this stock solution if kept in a tight-stoppered bottle may be used for four or five days), and add one teaspoonful of this milky stock solution to two gallons of the water to be purified in a pail or other receptacle. Stir thoroughly in order that the weak chlorine solution will come into contact with all the bacteria, and allow to stand for ten minutes. This will give approximately one-half part of free chlorine to a million parts of water, and will effectually destroy all typhoid and colon bacilli, or other dysentery-producing bacilli in the water. The water will be without taste or odor, and the trace of free chlorine added rapidly disappears.

The writers have followed this procedure repeatedly, using only the simple apparatus mentioned, consisting of a teaspoon, a cup, and a two-gallon pail. The water in the pail has been inoculated with typhoid and colon bacilli, and examined before and after chlorination. The result was invariably the same—namely, that all typhoid and colon bacilli were destroyed.

No.	Lake Ontario water Bacteria per Cc. at 20°C.	Lake Ontario water +typhoid bacilli Bacteria per Cc. at 37°C.	Lake Ontario water+typhoid+1 part chlorine per million Bacteria per Cc. at 37°C.
1	92	2,144	1
2	84	26,100	1
3	176	15,000	6
4	154	17,000	2
		Substituting colon bacilli for typhoid—	
5	65	95	0
6	132	2,250	1

The method is also applicable to the sterilization of wells which have been infected, provided, of course, that the source of the infection has been removed. It would obviously be futile to sterilize a well situated in a farmyard from which organic matter and bacteria are constantly draining into the well.

If one knows the diameter and depth of the water in the well in feet, the amount of chloride of lime may be easily estimated. For instance, the writer wished to destroy the bacteria in the well at his summer cottage, the well being six feet wide by four feet deep. The formula would be radius squared x 22/7 x depth of the water = 3 x 3 x 22/7 x 4 = 113 cubic feet of water in the well. One cubic foot contains six and one-quarter gallons of water, so that there were 113 x 6¼ = about 700 gallons of water in the well.

One and a half pounds of chloride of lime to 100,000 gallons will give roughly one-half part of available chlorine in a million parts of water, or one pound to 66,000 gallons. Therefore, 700 ÷ 66,000 x 16 = 1/6 ounce chloride of lime was necessary to purify the well. The chloride of lime was mixed with water, diluted, and poured into the well, and then thoroughly mixed by plunging a long pole with a couple of strips of wood nailed across one end up and down in the water. The water before chlorination contained 950 bacteria per cubic centimeters with colon bacilli

present; after chlorination there were only nine bacteria and no colon bacilli.

The water of Sturgeon Lake, which is a typical brown Northern Ontario water, was treated with one part of chlorine to a million parts of water according to the simple method outlined, with the result that the raw water count of 15,880 per Cc. was reduced to 8 per Cc.

Toronto Bay water taken from the slip at Aykroyd boathouse was chlorinated on the spot in a pail found in the boathouse, with the following results:

Raw bay water	Colon bacilli	Chlorinated with 1 part chlorine per million	Chlorinated with 0.5 part chlorine per million	Colon bacilli
16,000 bacteria	Present	18 bacteria	—	Absent
25,000 "	"	9 "	—	"
18,000 "	"	—	13 bacteria	"

Another series was made to determine what amount of chlorine could be added to a water infected with typhoid and colon bacilli, which would show a decided excess of chlorine by the potassium iodide starch reaction, and yet not be detected by the senses of taste or smell.

Chlorine in parts per million	Taste	Odor	Typhoid, colon and other bacteria per Cc. at 37°C.	Iodide test after 1-2 hour
0.0	None	None	5,452	None
0.5	"	"	0	Strong
0.33	"	"	0	"
0.165	"	"	0	"
0.125	"		0	Slight

This showed conclusively that more than 0.125 parts per million of free chlorine will destroy typhoid bacilli in Lake Ontario water if properly mixed, and that though the iodide test shows an excess of free chlorine in half an hour, not the slightest taste or odor could be detected by four laboratory workers in strengths up to 0.5 parts of free chlorine per million, when the taste became evident.

Fifteen different waters obtained from various points in Ontario and covering all the types found in the Province, were tested by the method outlined, in order to determine whether the large amount of organic matter present in some of the swamp waters would use up the available chlorine more rapidly than Lake Ontario water for example, and thus destroy the germicidal effect of the chlorine.

In one of the fifteen samples, which was a shallow surface well water containing hydrogen sulphide, there was no trace of free chlorine in ten minutes by the potassium iodide starch method. In one sample of a brown swamp water the chlorine could be detected by the senses of taste and smell. In all of the others there was an excess of chlorine, as demonstrated by the blue starch reaction after ten minutes, and yet the chlorine could not be detected by the senses.

We feel confident, therefore, that if the directions outlined are closely followed, there will be a sufficient quantity of chlorine added to destroy practically all bacteria without adding any foreign flavor to the water. If the taste is present the amount of stock solution added may be reduced until the taste just disappears without destroying the germicidal action of the chlorine.

Precautions to be observed:

Chloride of lime deteriorates rapidly when kept in cardboard packages or exposed to air. If fresh from the factory it should contain about one-third available chlorine. Of six pound packages obtained at random from the shops, three were found of high strength, although the others would be suitable if more of the stock solution were used.

If the weak variety only is obtainable, then one and a half teaspoonfuls of the stock solution should be added to two gallons of water instead of one teaspoonful.

If the chloride of lime powder be kept in a tightly stoppered bottle it will retain its strength for a long period. The prospector would only need to carry two small bottles, one for the powder and one for the stock solution.

It is very important that the stock solution should be thoroughly mixed with the water to be purified, in order that no bacteria may escape the chlorine. The chlorine will not enter lumps or particles of organic matter, so that if such material, or salt or mud is present, it should be strained off or allowed to settle, and the clear water used for sterilizing.

Waters containing hydrogen sulphide must be given larger quantities of chlorine solution.

Scopolamine (Hyoscine) As An Adjuvant in Chloroform Anesthesia*

By GEO. M. ILIESCO, Principal of the Veterinary College of Bucharest

Translated by DR. H. J. ACHARD, Chicago, Illinois

SCOPOLAMINE [Hyoscine] is an alkaloid found in the root of the plant Scopolia japonica, in the seeds of Hyoscyamus niger and of Datura stramonium, in the leaves of Duboisia, and in small quantity in the root of Atropa belladonna.

According to Lademburg, scopolamine, hyoscine, and atropine are three identical substances, having all the formula $C_{17}H_{23}NO_3$.

Scopolamine was isolated by Schmidt in 1892, and later was studied by Pawloff, Claussen and the pupils of Kobert, who found that this alkaloid exercises a sedative action on man.

According to Guauck, Claussen, Sorkt, Wood, and Ernst, scopolamine produces somnolence in man ten to twelve minutes after its administration.

Ernst showed that large doses produced excitement in the dog, and that this alkaloid is relatively little toxic for warm-blooded animals.

Paukul advises injections of bromhydrate of scopolamine to revive animals in chloroformic syncope.

Schneiderlin recommends scopolamine, associated with morphine, in the form of subcutaneous injections to produce sleep.

In 1897 De Stella made a detailed experimental study with this substance. He found that cold-blooded animals (such as frogs) resisted considerable doses, the fatal dose being 1-200 of its weight. The dog is killed by 0.66 Gm. per kilo of its live weight, whilst the rabbit resists much stronger doses: 1 Gm. per kilogramme of the live weight. In frogs small doses do not accelerate the heart-beats; toxic doses produce paralysis of the heart. In the dog small doses cause acceleration of the heart and increase blood-pressure-phenomena accentuated by increasing the quantity given; whilst big doses produce contrary effects.

Scopolamine diminishes salivary secretion in the dog, biliary secretion in the rabbit, and diminishes the quantity of urine in the two species; its employment is therefore dangerous in renal affections.

In 1899 Bourgon made a communication to the Biological Society relative to a case of idiosyncrasy to scopolamine. He recommends this alkaloid, however, as a very important mydriatic, especially where there is a tendency to glaucoma.

Another important study of scopolamine has been made by Kochman at the laboratory of Jena, and his results agree with those of De Stella. Towards the end of 1905 Kouffart and Walravens published a work on "The Employment of Scopolamine as a General Anesthetic in Surgery," in which they affirm that the principal quality of this special narcosis is to much reduce the quantity of chloroform needed.

Laurendeau, from the good results he had obtained, advised the employment of scopolamine in obstetrics.

Challet observed hypnotic and sedative effects in mental maladies.

In 1906 Professor Dupuis, helped by his assistant, Van den Eeckhout, observing certain successes obtained in human medicine by employment of this alkaloid, carried his observations further to the large domestic animals.

They discovered in their researches that scopolamine constitutes a valuable help in anesthesia by chloroform, and that this mixed method "scopolamine, plus chloroform" has advantages which no other method possesses.

Comparing anesthesia by chloroform alone, with that by chloroform plus scopolamine, we found:

1. The period of initial excitement produced by chloroform when administered

(Continued on page 300)

*Reprint from *Archiva Veterinaria*.

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Label Tuberculosis Meat as Such, Says Doctor Wiley

IN his initial article in *Good Housekeeping* for May Dr. Harvey W. Wiley, late chief of the Bureau of Chemistry of the United States Department of Agriculture, and for years one of our national spot-light characters, because of the part he has played in the administration of the Food and Drugs Acts of 1906, and in the benzoate-of-soda controversy, which dates further back, pleads for a change in the Federal Meat Inspection regulations so that the Government, in passing for food-purposes the meat from animals with localized tuberculosis, will require that it be stamped: "This is meat from a tuberculous animal considered by the inspector fit for consumption," instead of having it stamped "U. S. Inspected and Passed," as is now done, when the flesh is fit for human food. Dr. Wiley tells us truthfully that the proposed change in stamping would "greatly restrict the sale of such products. There are few people who would care to eat the flesh of an animal which on post-mortem inspection had been found to have a tuberculous lung, even if the dish were oxtail soup."

That Doctor Wiley is radical in his beliefs none deny, that he is sincere most persons believe, that he is well-meaning only his enemies have questioned, that his judgment is often bad is pretty generally known; but that he would deliberately make the above statement in a popular magazine seems incredible. To adopt his suggestion for labeling meat would be nothing less than criminal. It would amount to practically destroying millions of pounds of perfectly good food every year; and this would cause the present high price of meat to be greatly advanced, thus rendering an even greater number of people unable to afford one of the most highly nutritious and wholesome of foods. If deliberately doing this, accomplishing thereby no useful end, while destroying enormous quantities of wholesome meat for which poor people are starving, is not a crime, then our statutes need revising to make it one.

In all the article referred to there is not a suggestion by the Doctor, at least not a direct suggestion, that the meat passed by the Federal inspectors is unfit for food, but rather the request that it be labeled just what it is. This is exactly what is done, at the present time when it is marked, "U. S. Inspected and Passed." Did every meat consumer understand the nature of tuberculosis and other diseases of animals—were he a trained pathologist, and did he have positive knowledge that the Government's veterinary inspectors are competent, then there might be no objection, other than its inconvenience, to sending an autopsy report with every carcass; but what useful purpose would it serve? The pathologist present at the autopsy is in a better position to decide as to the wholesomeness of the carcass than is the one who reads his autopsy report.

Meat from animals slightly affected with tuberculosis could be scarcely more effectively *misbranded*, than by carrying the half truth suggested by Doctor Wiley. It would constitute merely an attempt (and a successful attempt at that) to play upon the fear that most persons entertain for the White Plague. The asinine suggestion that it was "considered by the inspector fit for consumption" would mean to many that it would produce tuberculosis, which is commonly known as "consumption." There would be no logical reason for limiting this misbranding to animals having shown lesions of tuberculosis. It would apply equally to those showing local actinomycotic tumors, to practically all southern cattle, which almost universally harbor the protozoa of tick fever, to animals harboring the germs of contagious abortion, etc., etc.

Had Doctor Wiley deliberately set about attempting to create a prejudice against his enemies in the Department of Agriculture responsible for the meat inspection by a most unfair means he could scarcely have chosen a more effective method. Had his aim been, not to improve our food products, but to embarrass Secretary Wilson and the officials of the Bureau of Animal Industry he would hardly have adopted a different course. Additional color is lent to this view, of why the article was written, by the fact that such weaknesses as our system of meat inspection possesses are mentioned in their worst light while no mention is made of the fact that the inspectors are experts—veterinarians especially trained for the work, or that the inspection regulations are such as to give the benefit of the doubt, in every case, to the meat consumer, and to safeguard amply the public health.

The article also shows that the author's knowledge of tuberculosis among animals is exceedingly limited, as the following quotations amply illustrate: "Permit them [tuberculous cattle] to infect not only the healthy animals of the herds but the hogs and sheep and other domesticated animals upon the farm;" and again the statement that "when this [eradication of bovine tuberculosis] is done there will be almost an entire elimination of tuberculosis in hogs and in sheep;" and lastly, the allegation that "hogs and sheep are usually infected [with tuberculosis] by the cow." The 27th annual report of the Bureau of Animal Industry shows that 27,656,021 carcasses of swine were inspected during 1910 and of that number lesions of tuberculosis were found in the carcasses of 749,657 animals. In the same year the carcasses of 11,149,937 sheep were inspected and not one was found tuberculous. In other words, tuberculosis is the commonest of all diseases in the hogs, and *so rare in sheep that a veterinary inspector might not see a case in a dozen years, though he were assigned to sheep inspection all the time.* Yet, these animals, hogs and sheep, are repeatedly classed together by Doctor Wiley as to their susceptibility to tuberculosis.

If Doctor Wiley is sincere in his desire to eliminate diseased meat from the American market, why does he not use his influence and the power of the magazine of which he is a contributing editor to create sentiment in favor of adequate inspection of that portion slaughtered in establishments having no Federal, and in most cases no other sort of inspection, which includes nearly one-half of the meat consumed in this country?

Every practising veterinarian knows, and everyone else who will take the trouble to investigate may know that food-producing animals are almost never allowed to die of chronic ailments, but that they are eagerly picked up by stock buyers in every part of the country at a price as low as the farmer can be induced to part with them and sold at slaughtering establishments having no Federal inspection. This condition of affairs is public knowledge, has been pointed out by sanitarians numberless times, and must be well known to Doctor Wiley.

Every live-stock shipper knows that all animals sent to an establishment having Federal inspection must pass an antemortem inspection, *before* he is paid for them, and any showing lesions of disease, and later

Starting on a call at Newton, Kansas.

being condemned on postmortem inspection, are his loss; therefore, in nearly all cases, only animals apparently healthy are sent to establishments having inspection, and those that the shipper fears may not get by the ante-mortem inspector, are separated from the apparently healthy animals and disposed of at a slightly lower price to slaughtering establishments doing a local business and having no meat inspection worthy of the name.

Here is a reform which may well engage the pen of Doctor Wiley and his enviable facilities for reaching the public. After he has brought the wholesomeness of this half of our meat up to the present high standard of the Federal-inspected half, he may, with better grace, begin to find fault with a system of meat inspection which all impartial observers agree is the best in the world.

INDIANAPOLIS PREPARING FOR A. V. M. A.

Arrangements for the big August meeting of the A. V. M. A. are well under way at Indianapolis and the timeliness, foresight and energy which the local committee are putting into their preparations for entertaining the veterinary profession of America, give valid guaranty of a profitable and successful meeting.

The following arrangements have been under consideration for some time, but were given definite form, and advanced to the point where carrying them out is but a detail, at a meeting of the local committee at the Indiana Veterinary College, Saturday, June 15th. Those present at this meeting were: Dr. G. H. Roberts, chairman; Drs. W. B. Craig, Ferd Mueller, G. T. Ferling, F. A. Bolser, T. A. Sigler, J. W. Klotz, J. B. Archer, C. I. Fleming, E. M. Bronson, O. L. Boor, and Mr. Harry Moore.

The following general scheme was adopted for the meeting, with such changes in the program, as the exigencies of the weather, and other conditions over which the committee have no control, make necessary.

Monday, August 26: Meeting of the Association of College Faculties and Examining Boards at the Claypool Hotel both morning and afternoon. The evening session will be given over to an illustrated lecture on Uruguay by former chief of the Bureau of Animal Industry, Dr. D. E. Salmon.

Tuesday morning, August 27: Address of Welcome by former vice-president, Chas. W. Fairbanks of Indianapolis. Response, and the President's Address. On Wednesday, Thursday and Friday (August 28, 29 and 30) the forenoons will be given over to a general session of the Association at the German House, and the afternoons to sectional work at the same place.

Tuesday evening, August 27, a reception the "Hoosier way" will be held at the Claypool. The object of this recep-

tion, unlike formal affairs that sometimes have been held, will be to *get acquainted.* Wednesday evening, August 28, the general session will be short (7 to 9 p. m.), followed by a Dutch lunch and vaudeville for the men in the auditorium of the German House, and a card party for the ladies in the parlors above. Thursday evening, August 29, the annual banquet will be held. Friday evening, August 30, will be kept open and used, if necessary, to complete any part of the program crowded from its position.

Saturday will be devoted to a clinic at the Indiana Veterinary College. Dr. J. W. Klotz will have charge of this clinic and already has secured beyond any likelihood of failure six roarers; nine hernias—three ventral, three scrotal, three unbilical; a number of diseased conditions requiring operations on the head; all the heifers and mares for spaying that the time allotted will permit of and several cases of obscure ailments for diagnosis. More subjects will be added to this list as the day for the clinic approaches, and those attending may have the choice of almost anything that veterinary practice offers, something to suit the taste of everyone.

French Lick Hotel, French Lick Springs, on the "Monon Route."

A non-official program will be prepared, giving a map of Indianapolis and enumerating the points of interest, historical and otherwise and showing the entertainment provided by the local committee for the ladies and such other of the visitors as care to avail themselves of it. The entertainment will be so planned as to have two separate features constantly occurring and the visitors will thus be permitted to select that which suits them the better. Among other things there will be an automobile ride to the Speedway, Riverside Park and other points of note, a trolley ride to Fort Benjamin Harrison, a theatre party, a luncheon, possibly a visit to the plant of Ely Lilly and Company and various other things to crowd the time full from the minute they arrive in Indianapolis and are met at the depot by a reception committee, as all visitors will be, until they leave for their homes.

The local committee find themselves in a way handicapped by the dilatory manner in which Secretary Marshall looks after his part in the program, likewise in securing new members, of whom a large number are expected from Indiana. Members of the committee have already lost the opportunity to secure more than twenty applications because application blanks could not be secured from the secretary. By the time the meeting is held members of this committee will appreciate the justice of former President Glovers' recommendation that Secretary Marshall's salary be reduced $100.00 per year because the Association was not getting its money's worth from him.

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For veterinarians and their families, attending the Indianapolis meeting, from Chicago and territory north and west, the

Monon Route offers numerous advantages over other lines of travel, among which are: it is the shortest line between Chicago and Indianapolis, its schedule is shorter than that of other lines, it has both night and day trains leaving Chicago and arriving in Indianapolis at hours convenient for delegates to the convention and in its "Hoosier Limited" it offers equipment and

Shady walk at French Lick Springs on the "Monon Route"

service superior to that which any other line can give.

In consideration of being selected as the official route of the Chicago Veterinary Society the Monon Route has placed at the disposal of the veterinarians the exclusive use of as many of the finest, most perfectly equipped coaches as they may need, on the "Hoosier Limited."

The trip from Chicago to Indianapolis is too short for a night ride, and half a night in a berth in a car in the railway yards offers few inducements to most of us. A daylight trip from Chicago to Indianapolis will probably appeal strongly to most of those attending this meeting. For such a trip the "Hoosier Limited" possesses many advantages. It leaves Chicago at noon, giving ample time for visitors from the north and west, whose trains arrive in Chicago in the morning, to make the necessary change of cars and for veterinarians of Chicago and immediate vicinity to look to their day's work and yet go on this train. It reaches Indianapolis in ample time for delegates to select their hotels before night.

For those wishing to attend the session held the first day of the meeting this Sunday-afternoon trip through Indiana will appeal with particular force. Some of those going later in the week may find it most convenient to use night trains, but it is expected that there will be enough on the "Hoosier Limited," both Sunday and Monday, to occupy at least two cars.

SIMMONS ATTACKS MEAT INSPECTION

In its issue for May 25, *The Journal of the American Medical Association* indulges, editorially, in a nasty, unfair attack on the Bureau of Animal Industry, saying among other things: "Charges have been made by *competent* and *unbiased observers* [italics ours], that the Federal meat inspection laws are administered in the interest of the packers rather than for the protection of the public, and that meat that would not be accepted at the ports of entry in Europe is passed by the Federal meat inspectors for home consumption. . . . . The enormous harm done to the health of the American people through the maladministration of the Food and Drugs Act and the Federal meat inspection law can hardly

Mineral Springs, French Lick Springs on the "Monon Route"

be estimated. The responsibility for it rests on Secretary Wilson and Solicitor McCabe, whose incompetency—or something else—has rendered the enforcement of these laws a joke."

So much for the charges of the journal which would have merit and coming from this source would be important but for the fact that they are in the main wholly untrue and in the minor part inconsequential. As indicated in our discussion of the subject last month, when Mrs. Caroline Bartlett Crane made her charges

before the congressional committee appointed to hear her in compliance with the Nelson resolutions, the committee found her charges wholly unsupported by the facts or by any thing in fact other than her own opinion. She was not found to be in any sense a "competent witness" nor an "unbiased" one either. The whole investigation "blew up" in short order. The chairman of the investigation committee publicly stating that no case whatever had been made against the Bureau of Animal Industry nor any basis found for the proposed investigation of the Bureau.

Had the editor of the *Journal* been disposed to be fair, he would have given the name of this "competent" and "unbiased observer"; he would have told that these same charges had been presented to the American Public Health Association two years ago and found without any foundation; he would have stated that the meat inspection regulations against which Mrs. Crane's charges were in the main directed have the approval of the most eminent pathologists in the country, including members of the American Medical Association of international repute; before stating that "the enormous harm done to the American people through the maladministration of the American meat inspection laws could hardly be estimated," he would have offered *at least one instance* in which some harm had resulted, would have cited *one occasion* in which the law has been maladministered, in short, had the editor of the *Journal* been disposed to be fair, he would have commended the Federal meat inspection as the facts warrant and discredited the whole charge.

The fact that American pork is accepted in England only upon certification after microscopic examination, is made much of, though it amounts to little. The same requirement is not enforced against English prepared pork. It is a discrimination against American pork to favor the English butcher and has not its basis in the wholesomeness or unwholesomeness of American pork. Furthermore, Congress has been repeatedly asked to make an appropriation for a microscopic inspection of pork for the detection of trichinosis when present, but the appropriation has not been made in recent years, and therefore our pork cannot be certified for the English market. Should we, because of this, refuse the entire output of American pork? Mrs. Crane would have us do so and the *Journal of the American Medical Association* seems to think it wrong for our meat inspection to permit the use of any meat in this country that is denied entry to any country in Europe for any reason—political or otherwise.

BIOLOGIC DIAGNOSIS OF PREGNANCY

Abderhalden[1] claims to have worked out a method of biochemical examination of the blood that reveals the presence or absence of pregnancy with great certainty. The test is said to be very simple. If it is adaptable to veterinary practice it should prove of great usefulness in these times of high stud fees.

TEAM WORK IN ILLINOIS

The veterinarians of Illinois will gather for their mid-summer meeting, July 9th, at the State Biological Laboratory in Springfield. Illinois is the only State maintaining a laboratory of this kind and the fact that it has such a laboratory, that it is under the direction of a veterinarian and that its products are distributed only through qualified veterinarians, is due solely to the *organized* efforts of the Illinois State Veterinary Medical Association and the Chicago Veterinary Society. There are qualified veterinarians in the State of Illinois, good men, too, who are not affiliated with either of these associations, but the net results of their efforts for the recognition of the profession by the State have been small. Thus again it is demonstrated that it is only by uniting their efforts, by combining in associations, that veterinarians are able to influence legislative matters affecting the profession, and the veterinarian who fails to work with, and through his state and local organizations

[1] Biologische Untersuchungen uber Schwangerschaft, Ztschr., f. physiol Chem., 1912 LXXVII, 249.

fails to do his whole duty to the profession and, to the extent that the welfare of the profession is his own, to himself.

Every veterinarian has received, largely and freely, from those who have preceded him. At the time of his graduation from school he possessed no knowledge of his profession other than what had been worked over, made easy and handed to him in doses readily assimilated, by the magnanimous workers who preceded him in the profession to which he aspired; he owed all that he was, and much that he hoped to be in the profession, to this source. Is he not as morally obligated to pay this debt, by in turn giving to his successors the best that is in him, as he is to meet any financial obligation that he may have assumed? Most assuredly so. How, then, can we justify his action in neglecting to affiliate with—in not having an active part in—his professional association, since it is through these associations that come nine-tenths of his opportunities to advance the profession in the estimation of the public?

When he discovers something in therapeutics, not known before, when he has worked out a method for an operation that is better than any that has been used before, when he has been able to combine a number of drugs or to produce a chemical compound that will relieve conditions heretofore incurable, it is a professional duty and an obligation he owes to those who have freely taught him, to publish these things—to pass them on for the benefit of others, now and to come.

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The live-stock interests of Illinois are greater than those of any other state; in this State and in Chicago, official positions, which in some states may be of little importance and little sought, become with our enormous interests, "big jobs," which influential politicians strive by every means to attain. In many states it has seemed the only thing to do to appoint a qualified veterinarian to the office of state veterinarian, but so important is this office in Illinois, that it was only after the most strenuous efforts on the part of the Illinois Veterinary State Association and the Chicago Veterinary Society, that this office was filled by a qualified veterinarian; and but for the *organized* efforts of these associations, the position would be held now and probably for years to come, by politicians outside of the profession.

Ten years ago the Chicago Veterinary Society asked Mayor Carter Harrison to appoint only a veterinarian to the position of "Superintendent of Horse" for the police department of Chicago. The request was refused, and for some years this position, which is an important one, and has the rank of "Captain of Police," was held by a shrewd politician and faithful worker in the field of votes. The Society never stayed in its efforts to secure this position for the veterinary profession, and soon, with a change in administration, this was attained. At the last mayoralty election Carter Harrison was again a candidate, and this time the Society took earlier action, and when the campaign for votes was hottest and no political prophet could tell how the election would go, the Society in the name of the more than 300 veterinarians in Chicago insisted upon and secured a written statement from both of the leading candidates as to their position in the matter of appointments to positions, the duties of which were purely veterinary. Carter Harrison is again Mayor, and this time a veterinarian has charge of the police mounts and other horses in the department. The same policy will be pursued in the future, and the Society does not expect again to see an important municipal office in this city, the duties of which are those of a veterinarian, filled by an incumbent from outside the profession.

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To get back to the Springfield meeting of July 9th: The secretary has planned, and beyond any doubt will be able to carry out, the best program ever given at a summer meeting of this association. It will be held, as before stated, at the State Biological Laboratory, an institution of which every veterinarian in the State is justly proud, one that owes its existence to the association. The members will be welcomed by the president of the Live Stock Commissioners, Phil. Haner, a better friend than whom the veterinary profession has not,

within or without its ranks. A number of demonstrations will be in charge of Dr. A. T. Peters, Director of the Laboratory; the whole under the direction of our efficient secretary, Dr. L. A. Merillat. What surer guarantee of a good meeting could be given?

BOOKS

The Modern Formulary, a Textbook of Chemistry as Applied to the Manufacture of Proprietary Specialties. By W. L. Cummings, Ph. D., Analytical and Consulting Chemist. In this book of more than 500 pages we find an exceedingly wide range of subjects, more or less fully discussed. There is a section on elementary chemistry; another on laboratory equipment in which the use and care of scales, mortars, graduates, heating apparatus, etc., etc., are given; still another on pharmaceutical processes, wherein is discussed solution, filtration, distillation, percolation, etc.; and a section on weights and measures, including all English and metric systems.

With this extended introduction the author prepares the reader for the section on toilet preparations, wherein is fully described a large number of ingredients commonly used in these products together with the method of making more than a dozen massage and other creams, face powders, bath powders, foot powders, dental specialties and hair dyes and hair tonics. Considerable space is devoted to perfumes and their preparation. A large section is devoted to medical specialties. The author's view of this subject may be ascertained from the following quotation:

"In short, the proprietary medicine business may be said to be the most profitable and the least satisfactory, aside from the financial part, of all forms of proprietary manufacture. The best the manufacturer can do is to adapt his medicines to the average human being, leaving the rest to chance, and when we take into consideration that the "average" man or woman is a very rare individual, we cannot help feeling that chance has considerably the long end of the bargain."

There are to be found in this work a very large number of formulas and directions for the preparation of liniments, ointments, corn-, catarrh-, pile-, rheumatic-, pain-, headache-, cough- and throat-remedies and remedies for burns and for obesity. Tablet and pill manufacture is also discussed.

An important section deals with household specialties, such as baking powder, flavoring extracts, metal, furniture, stove- and shoe-polish, laundry utilities, formulas for ink, library and other pastes.

While it is not primarily intended as a book of formulas, its purpose being rather that of a general reference book for use in connection with any formulas you may be using, it contains upwards of six hundred tested and proven formulas for all kinds of toilet, medical, household and miscellaneous specialties with detailed instructions for mixing and putting up each one.

In the appendix is given the full text of the Food and Drug Acts of 1906, together with the rules and regulations of the Department of Agriculture for the enforcement of this law. 511 pages. Physicians Drug News, 250 High Street, Newark, New Jersey, 1911. Second edition, cloth bound, $3.00, prepaid.

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Feeds and Feeding. A Hand-book for the Student and Stockman. Twelfth edition. Revised and entirely rewritten by W. A. Henry, D. Sc., D. Agr., Emeritus Professor of Agriculture, formerly Dean of the College of Agriculture and Director of the Agricultural Experiment Station, University of Wisconsin. The revised "Feeds and Feeding" is a large octavo volume of 613 pages, printed on clear white paper and substantially bound.

"Feeds and Feeding" is a cyclopedia or compendium of animal nutrition and the rational feeding of farm animals set forth in simple, helpful language. Its basis is the extensive investigations with animals in the physiological laboratories of Europe and America and the numerous feeding trials with farm animals conducted by experiment stations, especially those of America during the last thirty years.

To these have been added the experiences of successful stockmen, gathered from the widest sources. The substance of all the important work of our experiment stations in the feeding of farm animals, as set forth in hundreds of bulletins, is arranged, condensed, and made available to the reader. The subject matter is arranged in paragraphs or articles which are numbered. By the use of cross references to the numbered articles, given everywhere throughout the text, repetitions are avoided and the reader can quickly exhaust any topic on which he is seeking information. It should be in the library of every veterinarian. Price $2.25 per copy delivered. Published by the author, Madison, Wis.

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Dorland's American Pocket Medical Dictionary, edited by W. A. Newman Dorland, M.D., editor "Dorland's American Illustrated Medical Dictionary," containing the pronunciation and definition of all the principal terms used in medicine and the kindred sciences, including dentistry, veterinary medicine, nursing, etc., with over sixty extensive tables.

This dictionary first appeared in 1898 and in the fourteen years intervening between that date and its recent appearance, twenty-two revisions and reprints have been necessary or a little more than one every eight months. This alone is sufficient evidence of its high value and its remarkable usefulness to the medical and veterinary professions. It is less complete of course than the "New Dorland" desk size, but contains about all that can be expected of a work that is easily within the pocket size.

The beautiful red flexible leather covering and gilt edges give the work a most attractive appearance. The type is perfectly clear and the style one to make reference convenient and rapid.

Seventh edition, 32 mo, 610 pages. Philadelphia and London: W. B. Saunders Company, 1911. Flexible leather, gold edges, $1.00 net; thumb indexed, $1.25 net.

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Surgical and Obstetrical Operations. By W. L. Williams, Professor of Surgery and Obstetrics in the New York State Veterinary College, Ithaca, New York. This excellent little book, well known to all progressive veterinarians, has been quite carefully revised for this edition, which includes thirty more pages than its predecessor. The technic for some of the common operations, notably trephining the facial sinuses, has been changed somewhat and the description made clearer.

The description of the operation for roaring of course is entirely new and embodies full directions for performing this operation, according to the method that has been developed during the past year.

The mechanical work in this edition is an improvement upon that in the first edition. Better paper has been used and a clearer type employed and the division of the work into many short paragraphs also adds to its convenience. The work naturally falls in the following groups, and all recognized operations in each group are carefully described: Operations on the Head, Operations on the Neck, Operations on the Trunk and on the Genital Organs, Operations on the Extremities and Embryotomy Operations. Third edition, revised and enlarged, 1912. Carpenter and Company, Ithaca, New York. $2.50, prepaid.

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A Compend of Human Physiology. By Albert P. Brubaker, A.M., M.D., author of "A Text Book of Physiology," etc. In the preparation of this edition, which, by the way, is the thirteenth, in itself an evidence of the popularity of the work, many paragraphs have been revised and such new matter added as seemed necessary. The work is adapted for the use of students and for others who wish to review the subject of human physiology. The various subjects are treated in as complete a manner as possible in the small space allotted. The style is simple and clear and the subject matter pleasing. The following subjects are discussed: General Structure of the Animal Body, Chemic Composition of the Human Body, Physiology of the Cell, Histology of the Epithelial and Connective Tissues, Physiology of the Skeleton, General Physiology of Muscular Tissue, Special Physiology of

Muscles, Physiology of Nerve Tissue, Foods and Dietetics, Digestion, Absorption, Blood, Circulation of the Blood, Respiration, Animal Heat, Secretion, Excretion, The Central Organs of the Nerve System, Spinal Cord, Medulla Oblongata, Pons Varolii, Crura Cerebri, Corpora Quadrigemina, Corpora Striata and Optic Thalami, Cerebellum, Cerebrum, Sympathetic Nervous System, Cranial Nerves, Sense of Touch, Sense of Taste, Sense of Smell, Sense of Sight, Sense of Hearing, Voice and Speech, Reproduction, Table Showing Relation of Weights and Measures. 245 pages, 19 illustrations. P. Blakiston's Son and Company, 1012 Walnut Street, Philadelphia, 1912. Cloth bound. $1.25 net.

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Pharmaceutical Bacteriology, with Special Reference to Disinfection and Sterilization. By Albert Schneider, M.D., Ph.D., Columbus University, Professor of Pharmacognosy, Histology, and Bacteriology, California College of Pharmacy; Pharmacognosist, United States Department of Agriculture. It will be a surprise to some, whose acquaintance with druggists is confined to those of the old school, to learn that immunity and bacteriology and serology constitute a part of a pharmaceutical course, but such is now the case, in modern schools of pharmacy.

"Pharmaceutical Bacteriology," Schneider, is an elementary work on the subject, the beginning and succeeding steps as far as the work goes and given so plainly that we predict that veterinarians who received their schooling many years ago before bacteriology was such an exceedingly important branch of the curriculum of veterinary schools and who have not since had opportunity to systematically study this subject, will find this work, one that may give them a start.

The chapter devoted to the history of bacteriology is an exceedingly well written and interesting one. The history of bacteriology, our knowledge of infectious disease, is divided into five periods:

First Period, from Hippocrates (300 B.C.) to Leeuwenhoek (1656). During this long period man made but little progress in the study of disease and curious indeed were the varying opinions held, as to its causes and the cause of epidemics.

In the Second Period, from Leeuwenhoek (1656) to Schwann (1837), rapid progress was made. The microscope was perfected during this period and a world of minute organisms discovered. It was during this period that heating and hermetically sealing for fermentable products was first employed for their preservation.

The Third Period, from Schwann (1837) to Pasteur (1862), marked even more rapid progress in the science of bacteriology. By the close of this period the causative relation of bacteria to disease had been proven and accepted.

The Fourth Period, from Pasteur (1862) to Behring (1890), was one of remarkable activity. It was during this time that Sir Joseph Lister brought the use of disinfectants to a high state of perfection and modern antiseptic and aseptic surgery had their foundation. During this period Robert Koch discovered the tubercle bacillus, and the comma bacillus which causes Asiatic cholera. Klebs and Löffler discovered the bacillus of diphtheria, Friedlander and others the pneumococcus. Nicolaier and Kitasato discovered the tetanus bacillus, Schultz the bacillus mallei, etc.

The Fifth Period, from Behring (1890) to Wright (1907), is deemed the period of utilitarian bacteriology. In this period we find the subject of immunity absorbing the greatest attention and the evolution of biologic therapy including the use of antitoxins, bactericidal serums, vaccines and bacterins.

The morphology and physiology of bacteria are briefly discussed in this work. The consideration of bacteriologic technic occupies a considerable portion and is very similar to that given by others. A brief discussion of bacteria in the industries is up to date and found only in recent works. The subject of immunity receives passing notice and the manufacture and use of serums and vaccines a quite full description, though by no means adequate to prepare one for the manufacture of these products. In the article on disinfection and sterilization, veterinarians will find

very little that is new to them. The discussion of communicable diseases does not include the diseases of lower animals. The book is plainly written, profusely and well illustrated. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Pa., 1912. 240 pages, 86 illustrations. $2.00 net.

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Immunity. Methods of Diagnosis and Therapy, and Their Practical Application. By Dr. Julius Citron, Assistant at the University Clinic of Berlin, II Medical Division. Translated from the German and edited by A. L. Garbat, M.D., Assistant Pathologist, German Hospital, New York.

This book, the author tells us, is to serve a purely practical purpose and to fill the great need that he has discovered that the medical student and physician have for a short textbook, which reviews in a purely critical form the various methods of immunity diagnosis. From the translator we learn that "The methods employed for the necessary investigations have naturally improved and increased with such extreme rapidity that a severe task presents itself to one who desires to separate the more from the less valuable ones. It was therefore with extreme satisfaction that I greeted the opportunity of bringing out an English edition of this working hand-book on the various, but most essential methods used in the application of 'Immunity.' The author of this volume has, by his exhaustive research and extensive practical experience as a teacher, treated his field with such fulness and preciseness of detail that it is of value not only to the laboratory student, but also to the clinician."

For the medical student and the practitioner of human medicine, the work doubtless fulfills the foreword of its author and its translator. While much of its contents are old, it contains something that is new, for example the discussions of aggressions, phytotoxins, and zootoxins. The discussion of Ehrlich's side-chain and other theories of immunity are drawn out to wearying length.

A book giving in equal detail the various diagnostic reactions and methods of biologic therapy for the lower animals would be an exceedingly valuable one for veterinarians. This is useful to veterinarians only because of the general information which it contains. Two hundred pages, 27 illustrations, two color plates and eight charts. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, 1912. Cloth bound, $3.00 net.

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Year-Book of the Ohio State Veterinary Medical Association, compiled by its President, Dr. Louis P. Cook, Cincinnati. This is the largest, most carefully printed and best bound annual report yet published by any of the state veterinary association. The frontispiece shows a halftone of the seven officers of the Association. The names of the various presidents and secretaries since the organization of the Association are given together with all committees of the Association, a roster of the Association members, a list of all veterinarians licensed to practise in Ohio together, and the constitution and by-laws of the Association, constitute one section of this work. The minutes of the 29th annual (January 16 and 17, 1912) meeting of the Association, including the president's address, all business matters transacted by the Association and all papers read at the meeting, together with a report of the clinic, constitutes the remainder of this book, which comprises 156 pages and is durably bound in cloth. The value of the report is greatly lessened by the omission of the discussions of the papers and in some ways is rather amateurish in its make-up. Nevertheless it is one in which President Cook and every member of the Association may well take considerable pride. No price is stated, but we assume a limited number may be secured from the secretary, Dr. Reuben Hilty, 619 Walnut Street, Toledo, Ohio, for about two dollars per copy.

The following resolutions, taken from a large number which the Year-Book contains, will reveal the temper of Ohio veterinarians:

"Resolved: That Article 1, Chapter IV, of the By-Laws be supplemented as follows: 'No member shall engage in any form of

partnership practice with either a non-graduated or an illegal practitioner, nor employ such person as an assistant.'

"Whereas: many undergraduate students of veterinary colleges attempt to practise between and even during their college sessions, and thereby violate and encourage others to violate the law regulating the practice of veterinary medicine: therefore,

"Be it Resolved: That all veterinary schools in the United States and Canada be requested to establish a rule forbidding their students, under penalty of dismissal from college, to attempt to practice in this State before graduation, except with and from the main office only, of a graduate and legally qualified veterinarian.

"Whereas, Veterinary correspondence schools are advertising very extensively in this State, and by misrepresentation are inducing many to take the correspondence courses they offer in veterinary medicine and surgery and in veterinary dentistry; and, whereas

"These socalled 'schools' do not qualify their students for the practise of veterinary medicine, surgery, or dentistry, but simply encourage and promote veterinary quackery; therefore,

"Be it Resolved: That the President be and is hereby directed to advertise through the medium of newspapers and otherwise, as he deems best, the fact that correspondence-school diplomas do not give the holder any right to practise veterinary medicine, surgery or dentistry, and that no correspondence-school graduate has ever passed an examination before the State Board of Veterinary Examiners of Ohio; and,

"Be it further Resolved: That the sum of one hundred dollars be appropriated for such purpose.

"Whereas, The indiscriminate sale to and the misuse of tuberculin by unqualified and irresponsible persons is at present contributing more than any other factor to the spread of tuberculosis among cattle and swine and directly contributes a part toward the increase of the disease in man, therefore,

"Be it Resolved: That it is the sense of this association that the sale and use of this valuable diagnostic agent be confined to and the application thereof be made by regularly qualified and accredited veterinarians and no others, and

"Be it further Resolved: That in the event of any member of this association becoming aware of the falsification by any other member of any tuberculin test, it shall be his duty to report the facts in writing to the secretary of this association for presentation to the Board of Censors for action."

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Report of the Indiana Veterinary Medical Association, 17th Annual Meeting, January, 1912. Compiled by E. M. Bronson, Hartford City. This, the second annual report issued by the Indiana Veterinary Medical Association, is an improvement on its report of last year. Doctor Bronson has, we think, wisely omitted from this report the constitution and by-laws of the Association, a roster of the membership, and other data to be found in separate publications of the Association. So that while the report consists of but sixty pages, it has in it as much new material as we often find in a report of twice this size.

The faithfulness with which the discussions of every paper and all other topics before the Association is recorded is especially commendable and adds a great deal to the value of the work, and the wisdom of the publication committee in employing a stenographer with a very large experience in reporting medical meetings is thus demonstrated.

The principal subjects discussed in the report are: The Misuse of Antiseptics; Professional Ethics in Veterinary practise; Bacterins; The Efficiency of Hog Cholera Serum; Obstruction of the Small Intestines; Regulations to Prevent the Spread of Infectious or Contagious Disease; Movement of Hogs; Tetanus Antitoxin; The Jackass, His Peculiarities, Ailments and Treatment.

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Investigations of the Etiology of Infectious Abortion of Cows and Mares. Bulletin 165, Kentucky Agricultural Experiment Station, Lexington, by Prof. E. S. Good, of the Department of

Animal Husbandry. Readers of this journal are somewhat familiar with Professor Good's investigations of this exceedingly important subject. This bulletin is a large one, containing nearly 100 pages and more than twenty full-page half-tone plates and reviews, briefly, yet adequately, the work of others in the field of infectious abortion, in addition to giving a detailed account of Professor Good's own extensive investigations.

This bulletin is of unusual importance to veterinarians and all should make early application for it, lest the edition be exhausted and there be no copy left for them. It may be had free while the supply lasts by addressing the director of the Agricultural Experiment Station, Lexington, Ky.

The author does not hesitate to boldly strike at or contradict opinions almost universally held where occasion for it is found, for example:

"Colts that come alive from a stud of mares affected with abortion are generally rheumatic and have swollen joints. This malady is known among breeders of horses as "rheumatism" or "joint ill." Colts affected with "joint ill" appear very lame and walk with difficulty, while in some cases abscesses form at the joints.

"The hock, knee, ankle, or any joint may be affected, but the articulation at the hock is the favorite seat of this trouble. The eyes may be involved, interfering with the sight, and may cause total blindness. It has been noted that an epizootic of "joint ill" among the colts of a stud will occasionally occur a year previous to a general outbreak of the disease of abortion among the mares of that stud. In some cases in a stud afflicted with contagious abortion, colts delivered at the full term of gestation appear strong and healthy at first, then suddenly sicken and die with a form of pneumonia, while others become affected with white diarrhea, which usually terminates fatally. A large number of mares in a stud may abort one year and nearly all deliver live healthy colts the next year."

Ills like those discussed above are almost universally charged to streptococcic infection which effects an entrance at the umbilicus and is usually thought to be avoidable by a proper regard for asepsis in the care of the navel of the new born. It will be a relief to some veterinarians to learn that their efforts at stall disinfection and navel sterilization, which failed to prevent the appearance of navel ill in foals, was probably not, after all, at fault.

The following summary is given:

1. A disease known as infectious abortion has been recognized in cows and mares for a long time, both abroad and in the United States.

2. In 1896 Bang and Stribolt of the Royal Veterinary College, Copenhagen, Denmark, isolated a bacterium from the uterine exudate of aborting cows which was capable of producing the disease in that animal. This organism has also been isolated by workers in other European countries and recently in the United States.

3. This laboratory has isolated this germ (Abortusbacillus, Bang) in ten cases from three herds of aborting cows in Kentucky three of which were from the internal organs of fetus.

4. In one instance we secured a growth of this bacillus from the blood of the liver, kidneys, and umbilicus, and from the contents of the stomach and large and small intestines of the fetus.

5. There were instances in which we were able to find this germ in the afterbirth and stomach of the fetus, but unable to secure a growth of the organism.

6. Methods of isolation as well as the physiological, morphological and cultural characteristics of this germ, together with illustrations of the same, are given in this bulletin.

7. The bacillus causing the disease of infectious abortion in cows has not as yet been isolated from the uterine exudate of aborting mares, by this laboratory, nor as far as we know by any other laboratory.

8. A bacillus belonging to Subgroup II, or Intermediate group, of the Colon-typhoid group (to which subgroup belongs such pathogenic organisms as Bacillus enteritidis and Bacillus cholera suis) has been isolated by this laboratory from the af-

terbirth, the uterus and the internal organs of fetuses of two studs of aborting mares and one stud of aborting jennets.

9. In two instances the Bacillus coli communis was found in large numbers in the fetal membranes of mares aborting in the early stages of gestation.

10. The pathological changes in the afterbirth and internal organs of fetuses of aborting mares are much more marked than is the case with aborting cows.

It is a bulletin that every veterinarian should have. Get it.

LEADING ARTICLES

Continued from page 286

SCOPOLAMINE (HYOSCINE) AS AN ADJUVANT IN CHLOROFORM ANESTHESIA

alone, which may be long, violent, and often dangerous, is almost suppressed by the employment of scopolamine.

2. The quantity of chloroform employed in the mixed method of chloroform plus scopolamine is smaller than in the case of anesthesia by simple chloroform.

3. The time occupied is shorter with mixed anesthesia than chloroform alone, and the recovery of the animal more rapid.

Thirty experiments were made, and the scopolamine was administered intravenously, but it may be equally as well used subcutaneously. For these injections the solutions may be made in distilled water. For intravenous injections, Locke's liquid (without glucose) has been used as the vehicle. The solutions may be made in the proportion of 1 : 200, 1 : 100, and even 1 : 50.

The dose employed varies according to the weight and temperament of the animal. The effects may be obtained by weak doses, 1-10 milligramme suffices for the frog, and for the dog and horse two to six milligrammes per kilogramme of the body weight. All causes which diminish the quantity of chloroform necessary to produce anesthesia lessen danger of cardiac syncope. Cardiac syncope has been attributed to excitation of the pneumogastric nerve or its bulbar nucleus by chloroform. It is said that by paralyzing the pneumogastric scopolamine prevents syncope, but this we doubt.

Conclusions.—1. Scopolamine accelerates the heart-beats, augments blood-pressure, increases respiratory movements. It modifies the peripheral nervous system, suppressing the pneumogastric in the dog and moderating its action in the rabbit. One dose does not observe any appreciable modification of the sympathetic; it has no action on the depressor nerve. It increases the excitability of the nervous centers at first, and depresses them afterwards.

2. Scopolamine is an important auxiliary in chloroform anesthesia, this effect being obtained in a shorter time and with less chloroform.

3. This action of scopolamine is due to two modifications on the system; (a) On the central nervous system; (b) on the circulation and respiration.

4. Fatigue affects anesthesia by chloroform in the same way and by the same mechanism as scopolamine.

5. The quantity of chloroform employed being much reduced, the cerebral troubles produced disappear rapidly, the animal wakes quickly, and sensibility is rapidly re-established. Only dilatation of the pupil remains for twenty-four hours, and sometimes longer.

6. Scopolamine prevents cardiac syncope, not by paralyzing the pneumogastric but by reducing the quantity of chloroform employed; one thus avoids heart intoxication.

7. Mixed anesthesia by chloroform plus scopolamine is recommended on one condition only; one must not push anesthesia too far, for respiratory syncope once produced, the heart being very accelerated, under scopolamine, the oxygen of the blood is rapidly consumed and the animal dies more quickly than in the case of anesthesia without scopolamine.

Enclosed find a check for $2.00 for my renewal. I like the JOURNAL very much, also "Springtime Surgery." It is more than worth the price.

JOHN R. BERGGREN.

Clifton, Wis.

POINTED OPINIONS ON LIVE TOPICS by Readers of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the thanks of the editor, the approval of the veterinary profession and the lasting gratitude of those who are aided by your suggestions.

The Treatment of Wounds in the Dog

EDITOR'S NOTE.—The following paragraphs are taken by permission from the chapter on "General Surgery" in "Surgical Diseases and Surgery of the Dog," by Dr. Cecil French, Washington, D. C. These excerpts show the high character of this work, which should be in the hands of every veterinarian who gives attention to canine practice.

SINCE Lister first advocated the employment of chemical agents to prevent bacterial development in wounds, the principle has been generally adopted, though it has received modification in recent years. The original plan of antisepsis comprehended the disinfection of instruments, suturing material, operator's hands, area of operation, and everything coming in contact with the wound, by means of chemical germicides supplemented by post-operative treatment of the wound with antiseptic agents to inhibit the growth of bacteria.

Antisepsis is still practised, but on this continent has given place largely to the aseptic method in which the use of chemical agents is limited solely to the disinfection of the operator's hands and the cutis of the area of operation, sterility of instruments and suturing material being obtained by means of heat; no antiseptics are permitted to come in contact with the wound, chemical agents being regarded as irritants to the tissues. Whatever advantages either method may have over the other in its application to human surgery it is not within our province to consider and we need only concern ourselves with the one best adapted to canine surgery.

There can be no question whatever that the necessity for the application of antisepsis in the latter instance has been greatly over-rated and that, with a few exceptions, equally as good results are obtainable when nothing more than the ordinary rules of cleanliness are observed.

The danger of starting up pyogenic processes consists not so much in introducing bacteria from without as it does in creating conditions within under which such bacteria can thrive to the point of producing a toxic effect.

It is when putrescible matter exists in spaces removed from direct contact with the phagocytic action of the living tissues that the conditions are ripe for bacterial multiplication. Putrescible matter is easily creatable by the ligating of portions of tissue, such as the omentum and large vessels, so as to form stumps; it is also ready existent in the form of certain natural secretions, especially those of serous cavities, such as joints and the pleural sacs, where septic surgical interference is commonly followed by pyogenic processes, particularly when abnormal accumulations of fluid are present. The normal peritoneum must be excepted on account of the well-known comparative immunity it enjoys, probably

by reason of the numerous recesses existing between the coils of the viscera where there is a chance for microbic activity to become localized, the pleura and joints on the other hand offering an unbroken extent of space for the accumulation of fluids. Hence the object should always be to avoid the creation of putrescible matter, but inasmuch as this is a matter of impossibility in some parts of the body, it is necessary to take precautions to prevent infection by the practice of aseptic methods, or resort to the alternative of drainage.

Aseptic methods are indispensable in operations involving interference with the thorax, the cerebrospinal canal, joints, and deeply situated organs such as the thyroid gland; they are not so necessary when the peritoneum is concerned, excepting when ascites is present, but are advisable as a precautionary measure; they are also expedient in operations on the surface of the body but can be dispensed with where local infection has already occurred, as in wounds and abscesses.

The preliminary steps in an operation on the lines indicated above consist of sterilization of instruments and material and disinfection of the hands of the operator and the cutis in the area of operation.

The treatment of wounds comprises arrest of hemorrhage, removal of foreign bodies, drainage, and coaptation of edges. Hemorrhage from the larger vessels is controlled by ligature, preferably with silk, a tourniquet being employed in the meantime if deemed advisable; bleeding from capillaries is controlled by hot water or compression. To secure the best possible conditions for healing it is important that all oozing be completely checked.

While experiment shows that blood-clot contains a large amount of bactericidal substance it is known that the pyococcus aureus is very resistant to the latter, and if present renders a clot putrescible and conducive to suppuration. In case of considerable hemorrhage large quantities of hot saline solution (5 : 1000—1 : 100) should be injected into the bowel or hypodermically. Foreign bodies must be extracted with forceps, and if necessary, their point of entrance enlarged. Usually, it is best to clip away the hair from the immediate vicinity of a wound.

Antiseptic irrigation should be avoided, particularly in recent wounds, as all antiseptics tend to irritate the tissues more or less. A single exception is hydrogen dioxide, which may be used for the purpose of breaking up and removing septic material. It is better to cleanse with a stream of warm sterilized water directed from a fountain syringe.

Even in suppurating wounds antiseptics may be dispensed with where good drainage is provided. Abscesses must be opened and carefully inspected for presence of foreign bodies and dependent drainage openings established. The edges of fresh wounds should be so adjusted that no cavity be left in the deeper parts in which serum and blood may collect. Where this is not possible ample provision must be made for drainage, to prevent abscess formation.

The part of a wound most difficult to treat is always the subcutis. Here the defensive power of the organism is poor, and should there occur any intervening spaces they form suitable pockets for the reception of blood and serum which, for the first few hours, exude in considerable quantity from the surrounding wounded capillaries and veinlets, and which, as already stated, form putrescible material. Should there be the slightest degree of infection present, the microorganisms, being removed from contact with living tissue, are free to multiply beyond the area of its phagocytic action, and thereby establish abundant suppuration.

It is very difficult to prevent the formation of spaces in the subcutis, especially in fat animals. To ensure drainage the most dependent extremity may be left gaping, but in some cases it will be necessary to insert a strand of plain sterilized gauze, one end being allowed to protrude slightly, and leave it in place three or four days. This holds good, of course, where bandages can be applied or other means taken to prevent the animal from reaching the parts with its teeth or feet. Where the entire surface of the wound can be brought into apposition so that no cavity remains

drainage can be dispensed with, but all doubtful cases should be drained.

The edges of fresh wounds are best united by subcuticular sutures. But wounds, the edges of which indicate the development of cicatrization, and from which the animal has once torn the sutures, are preferably permitted to fill up by granulation. It is remarkable what large-sized wounds will fill up completely by granulation and leave hardly a semblance of a scar, particularly in animals with abundant hair.

RUPTURE OF THE PREPUBIAN TENDON IN ADVANCED PREGNANCY

The accompanying photograph of a mare, which was ten months with foal, shows a case that I had recently. The mare really presented a worse sight than the illustration indicates. I could not obtain much information about the mare, as to how long she had been in this condition, as she was allowed to run out with no attention paid to her. The owner could only say he had noticed her standing in one place out in the field for a couple of days and told one of his men to bring her in.

I told the owner that nothing could be done for her and she died two days after I first saw her. Note the position of the teats, several inches anterior to the normal location. In the raphe between the teats the skin was broken open and presented a raw, bloody sore. The swelling was doughy and pitted on pressure, leaving finger marks; the skin was much discolored around the teats.

I passed a small trocar into the swelling at different points, but did not get anything, which showed it was not ascites. I rather suspected a rupture, but could not detect any on account of the swelling. Thinking this might interest you, I send the photo. I am sorry that I was unable to hold an autopsy.

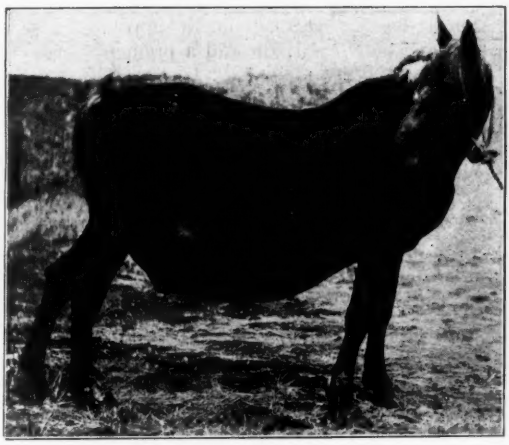
A. T. EVERETT, D.V.S.

South Omaha, Nebr.

[The illustration is a most excellent one, showing a typical case of rupture of the prepubian tendon in the latter weeks of pregnancy, a condition not rare in breeding districts. The following paragraphs from the referee on all obstetric questions—William's "Veterinary Obstetrics"—make plain the pathological condition; its cause, symptoms and treatment:

"The eventual lesions consist of a transverse rupture of the prepubian tendon, immediately in front of the pubis, between the two abdominal rings. Both of these rings are usually involved and, when the rupture becomes complete, obliterated, all tissues between the two openings being torn asunder.

"The disease or accident is practically confined to the mare. We have seen one instance in the cow, and have found no record of its occurrence in other animals.



Rupture fo the prepubian tendon in advanced pregnancy

"So far as known, the rupture takes place only in advanced pregnancy, rarely prior to the close of the tenth month, usually during or after the completion of the eleventh.

* * * * * * * *

"The first symptom noticed is an extensive edema of the abdominal floor, beginning just in front of the mammary gland and extending thence forward and backward until it reaches from the anterior pectorial region to the perineum, covering

the entire floor of the body for a depth of two to four inches. The edema presents the usual clinical characters, except that it is possibly somewhat firmer than generally seen and somewhat more inclined to be painful to the touch.

"The exact relationship of the edema to the rupture of the tendon is undetermined, our observation leading us to believe that the former is an expression of serious degenerative changes which are taking place in the deeper parts. The edema apparently involves the tendon itself from the first and diminishes its resisting powers by forcing the fibers apart, as well as weakening them directly.

"The movements of the patient soon become restricted to such locomotion as is essential, and this is marked by care and deliberation. The restriction of movement may be partly due to the mechanical impediment of the edema, but it appears rather to result from pain and a premonition of injury.

"This restriction of motion generally precedes the rupture of the tendon and is increased as the rupture extends.

"Should the tendon remain intact until relieved of its excessive load through parturition, the edema quickly disappears and the parts become normal, but in many cases the tendon gives away before the foal is born. The mare then succumbs or, recovering, is ruined in value. The foal generally perishes.

* * * * * * * *

"The rupture of the tissues between the abdominal rings obliterates these and relaxes the fixation of the mammæ in them. The abdominal tunic also becomes ruptured on the same level, the skin becomes greatly stretched, the milk glands are displaced downwards and forwards, as indicated by the position of the teat at T in Figs. 82, 83, 84 and 85, [See "*Veterinary Obstetrics*," pages 439—441.—ED.] and the glands become less conspicuous because of the compression from the stretching of their capsule derived from the ruptured abdominal tunic.

* * * * * * * *

"The skin and skin muscle tend, by their elasticity, to check or stop the progress of the rupture, in which they are aided somewhat by the resistance of the uterine ligaments and the mesentery, which aid in supporting the visceral weight when the organs have become displaced downwards. In some cases in our practice, the skin and its muscles did not suffice to stay the progress of the rupture, but gave way, causing eventration and necessitating immediate destruction of the patient.

* * * * * * * *

"The *prognosis* of complete rupture of the prepubian tendon is very grave, since most mares, along with their foals, perish before the conclusion of the pregnancy during which the rupture occurs.

"If the parturition, following the pregnancy during which the accident occurred, is safely passed, the animal may thereafter breed without danger or difficulty, but is so unsightly that her value for this purpose is seriously diminished. She may do ordinary slow work, but here the unsightliness becomes still more serious and few persons are willing to use such an animal.

"The foal in the uterus at the time of the rupture usually perishes, but, if the mare survives, succeeding foals may be born with the same safety as though the lesion did not exist.

When a threatened or beginning rupture is promptly recognized, and appropriate measures for prevention or relief applied, the prognosis is highly favorable.

* * * * * * * *

"*Edema in advanced pregnancy* in the mare is a serious condition, which calls for prompt and energetic handling. It should always be regarded as a precursor of rupture of the prepubian tendon. If left without attention, many of the mares will succumb from rupture; if proper attention is rendered the danger will be almost wholly averted.

"*Treatment.*—In the handling of threatened rupture of the prepubian tendon, mechanical support of the greatly overloaded and weakened abdominal floor should receive our first consideration. Whenever extensive edema occurs along the floor of the abdomen in a mare far advanced in pregnancy, unless the condition is clearly referable to unimportant causes,

we urgently advise the immediate application of an abdominal bandage of canvas or other strong material. The bandage should be constructed with eight or ten buckles and billets and fitted to the oval form of the abdomen by means of a gore placed in the center of the canvas. We do not at all times have the required amount of time for properly constructing the bandage, and, in order to avert immediately threatening disaster, an emergency, many-tailed bandage should be quickly applied. In order to adapt this to the oval form of the abdomen, the tails should be crossed so that the most posterior of one group of tails shall be tied to one of the most anterior of the other end, and the remaining tails united upon a similar plan. The spine and the point where the ends of the bandages are tied should be amply padded to avoid pressure-necrosis of the skin from the buckles or knots, and should be carefully re-adjusted daily or as often as conditions may dictate.

* * * * * * * *

"The decrease in weight of the abdominal viscera is also of very great importance. We should lessen the weight of the digestive viscera by withdrawing all bulky food and replacing it with limited quantities of concentrated aliment. We might hurry the unloading of the intestinal tract by the aid of small doses of eserine sulphate, or arecoline hydrobromide, such as half-grain doses every half hour, until the desired effect has been induced.

"If the tendon has parted, the induction of premature labor should receive careful consideration.

"As a rule, the foal perishes unless aid is given. Even under close watching, the uterine contractions go on unobserved and cause the death of the foal through separation of the placenta before adequate expulsive force is brought into play. Most of the expulsive power is destroyed when the abdominal floor gives way, leaving the uterus alone to expel the fetus. It therefore seems desirable to anticipate this danger of the fetus by bringing about artificial delivery not later than the completion of the eleventh month, in a way to best safeguard the life of the fetus. The premature delivery is best effected by carefully dilating the os uteri with the hand; grasping and, if necessary, cording the fetal parts presenting, and applying moderate traction to compensate for the lost expulsive power of the abdominal muscles. It is to be remembered that it is best to have the patient in lateral recumbency during the delivery, since this raises the fetus approximately to a level with the pelvic inlet. When the mare is in the standing position the fetus drops down below the pelvis, through the immense rupture, and rests upon inert parts.

"If premature delivery is not decided upon, the mare should be closely watched and prompt aid should be given at the first signs of labor.

* * * * * * * *

"The mare may be retained until the foal is ready to wean, and then destroyed; she may be kept permanently as a brood mare, with reasonable assurance that thereafter she will foal unaided; or she may be used at moderate work without discomfort.

"In the very severe cases, when the skin and skin muscles are giving way so that eventration is imminent, or when accompanied by shock and serious internal hemorrhages, the mare should be promptly destroyed, after performing Cæsarian section if it is desired to save the foal."

"Veterinary Obstetrics" gives a great deal more on this subject, including several illustrations, all of which every veterinarian with any obstetric practice among horses will find valuable.—EDITOR.

THE INTRADERMAL TUBERCULIN TEST EFFICIENT

Last November Doctor Smith tested a dairy herd, consisting of thirteen head, in the vicinity of Grand Rapids, for tuberculosis. At this time nearly all of these cows showed a marked reaction. The milk was barred from the city, and the owner appealed the case to the State Live Stock Sanitary Commission. These cattle were again tested by the State in March, and nearly all of them reacted. In each of these tests there were some cows that did not show marked reactions, but all

were condemned. Through the courtesy of Doctor Smith we were able to purchase these cows, which at this time were eleven in number, as two had died during the winter. These cows were brought to the college and given the intradermal tuberculin test, and all reacted. Two of these cows were about to deliver calves. On postmortem examination the results of the intradermal test were proven accurate, as they were all tubercular. This test brought forth some very interesting things. The intradermal test was given within two weeks after the subcutaneous test. Two of the cows were far along in pregnancy and could not have been tested accurately with the subcutaneous test. Cows that did not give a clear reaction to the subcutaneous test, reacted clearly to the intradermal test. This test was highly interesting as there was no doubt about the reactors or reactions, as they were all killed and autopsies held.—*The Veterinary Standard.*

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[The intradermal tuberculin test seems to have passed the trial stage and to have proven itself entirely worthy to wholly supplant the thermal test. Where the injection of tuberculin is *properly* made the results are easily interpreted and are accurate. Meteorologic influences, estrum, strange quarters, or slight indisposition do not affect the results obtained by this method. How long those officially responsible for tuberculin testing will continue in the old way is a question. Nothing has been proven against the intradermal test and it may be said that the subcutaneous test wastes nine-tenths of the funds appropriated for tuberculin testing and limits the amount of testing done to a small fraction of what could be accomplished by the intradermal test with the same funds. If this be true, let us adopt the new method. Squandering public funds, and temporizing in efforts at the control of tuberculin, should not be tolerated by those of our profession in important official positions having to do with this work.

That the intradermal test for tuberculosis is efficient—superior to any other known method—is proved by the evidence of Dr. D. F. Luckey, formerly state veterinarian of Missouri, under whose direction more than eight thousand head were successfully tested in this way; the evidence of the present state veterinarian of Missouri, Dr. S. Sheldon, who employs no other method; the evidence of Dr. L. D. Brown of Hamilton, Missouri, who has personally tested more than a thousand head of cattle by the interdermal test and followed every reactor to the abattoir; the experience of Doctor Washburn and other B. A. I. inspectors at Kansas City; the testimony of Dr. T. A. Shipley, inspector-in-charge at the South Saint Joseph packing houses, who says intradermal reactors kill out at least as true to the test as the thermal reactors, and the experience at the Grand Rapids Veterinary College noted above.

On the other hand, the only fault so far charged to the intradermal test is that it requires considerable skill to make the injection properly.

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The statement in the foregoing reprint that "two of the cows were far along in pregnancy and could not have been tested accurately with the subcutaneous test" it seems will never die. It has been refuted in these pages and elsewhere and in the experience of practically all who are using the thermal tuberculin test to any extent, yet its ghost lives on and on with no other support than tradition. I have frequently tuberculin-tested cows (thermal test) on the day of calving with just as accurate results as are to be obtained at any time. —EDITOR.]

THE LOCAL TREATMENT OF WOUNDS

In the treatmnet of any wound, of whatever character or location, the first and most essential matter requiring attention is good drainage.

To this end, when dealing with punctures, especially nail punctures of the feet, it is highly important that the veterinarian should remove the sole of the foot immediately surrounding the puncture, and, as in any punctured wound, thoroughly examine the wound to determine whether

or not any foreign body remains in it. After this is carefully attended to the wound should be thoroughly irrigated with antiseptics by means of a syringe with a nozzle sufficiently long enough to guide the solution to the bottom of the puncture, or in case it is a wound of the foot a more effective way will be found by using a bucket in which to stand the foot in the warm antiseptic solution, for twenty or thirty minutes.

Small punctures should be thus treated twice daily for three or four days with 1-1000 solution of mercuric chlorid, or preferably 1-1000 or 1-500 chinosol solution. Larger wounds should receive the same treatment but when large enough and so situated as not to admit of free drainage they should be tamponed between the irrigating periods with gauze saturated with a one and one-half percent creolin solution, or 1-1000 chinosol solution, for about forty-eight hours. When free drainage can be supplied the tampon should be omitted.

In wire cuts, after providing drainage and thoroughly irrigating with the bichlorid or chinosol solution the wound should be stitched if long and gaping, otherwise much better results will be obtained by leaving the wound unstitched, which provides better drainage and at the same time allows the wound to heal from the bottom, thus avoiding the pocketing of any pus by the edges of the wound healing over first. Some practitioners maintain we should never stitch a wound even when the owner demands it. I hold this to be poor business policy for it seems to me the owner should be considered when treating his animals in so far as in complying with his wishes we do not subject his animals to inhumane treatment or jeopardize their lives.

Furthermore when we are dealing with triangular or right angle wounds from sixteen to eighteen inches in either direction, with a large flap of tissues hanging down, as I have often seen, it seems to me no practitioner should hesitate to stitch.

I call to mind a racing mare with such a wound in the flank, which I stitched and which healed nicely although the abdominal tunic had a small narrow lesion almost penetrating the abdominal cavity.

After the wound has been sewn up a careful watch should be maintained to determine the presence of sepsis if such should occur. For three or four days the wound should be irrigated with one of the above solutions twice daily after which, if there is no pus retained in the wound and no prodromes of septicemia, as indicated by the temperature, and so forth, the solution should be discontinued in order that we may not disturb the healthy wound secretion which is nature's wise method of protecting and healing the wound.

In order that we may not disturb the healthy wound secretions the following antiseptic dusting powder should be used twice per day, on all wounds accessible to its use, after two or three days.

Boracic acid, two ounces; zinc oxid, two ounces; acetanilid, one ounce; chinosol, one tablet. Pulverize and mix well and apply as needed, by means of a shaker.

In the event excessive granulation (proud flesh) appears it should be painted with a nitrate of silver stick as often as necessary to reduce the same. Should the granulation have become decidedly excessive before the veterinarian has been consulted the most effective method of its removal is by operation.

Abscesses, such as "shoulder boils," "shoe boils" or any chronic inflammation accompanied by enclosed pus, although not wounds, require similar treatment after the first operation, as in the case of wounds the first step in their treatment is perfect drainage when possible, after which they should have all necrosed or abnormal tissue removed either by curetting or if necessary by the knife. After this is done treat as any other wound.

Salves of any kind have no useful purpose around a wound except in cases where in the process of healing they become dry and inclined to crack, when a salve composed of carbolized vaseline is useful.

The use of bacterial vaccines in wound treatment does not belong to the subject of the local treatment of wounds, hence I shall not enter into their discussion.

Although I have not been in active practice for a number of years I am convinced that my success in the treatment of

wounds is to be found in the fact that I always endeavored not to disturb healthy wound secretions by irrigating after the first few days, but using in their stead the very excellent antiseptic dusting powder given above.

D. I. SKIDMORE,
Veterinary Inspector, Bureau of Animal Industry.
Dayton, Ohio.

OHIO DIDN'T SET THE PACE

Reply to an article appearing in the *Chicago Veterinary College Quarterly*, for March. The article referred to is one headed, "The Ohio State Medical Association sets the Pace for Other Associations."

"The 'Year Book' of 1912-13 gives papers and discussions of the meetings, a list of the practitioners of the state, the laws in force in the state, antagonistic bills killed in the Legislature, and so forth, thorough going way in which the Association has used its weapons of defense, and so forth."

If it contains this information, it is indeed a volume to be proud of, and should have a wide circulation. Indeed we believe that it does contain all the writer claims for it; and pray, why should it not? Are they not veterinarians fighting for the common cause of advancement of the *greatest profession on earth?* That may sound extravagant to some, but not to one that has devoted what few years he has been a practitioner, of his chosen profession and more than that, done considerable drudgery for the benefit of that profession.

The writer of this article has in mind a publication, or rather two pamphlets published, that appeared upon the horizon of the Missippi Valley somewhat in advance of the one mentioned, namely: The pamphlet of the Indiana Veterinary Medical Association, containing 74 pages of papers and discussions, and a pamphlet of 63 pages containing the veterinary laws of Indiana, the rules of the State Board of Veterinary Examiners, and a list of all legal practitioners arranged both alphabetically and by counties. The first was issued about April 1st, 1911, and the latter in 1909. The first was mailed to all legal practitioners in the state, to all association secretaries of neighboring states and to the resident secretaries of the A. V. M. A. Also to at least three different veterinary publications.

At the present time Indiana has in the mails a pamphlet of 62 pages of the proceedings of last annual meeting, also a booklet of 24 pages containing all the veterinary laws of Indiana together with amendments of veterinary practice.

There is also in print, by the State Board, a booklet that will give the name, address, college and date of graduation of every graduate that has registered in this state, whether in practice or not, and also all registered men whether graduates or not arranged both alphabetically and by counties. This booklet it is estimated will contain about 63 pages.

In face of these facts, and the pamphlets and booklets are being forwarded to the publisher of this article, would it not appear to the writer that Ohio did not "Set the pace"?

Let it be thoroughly understood that the undersigned has no malice against any one whatever in the facts given; far from it, but insomuch as Indiana's maiden effort did not attract attention, we believe it is now time to see and know that she is heard from, if for no other reason, than that, we *Hoosiers* want to meet *all of you* at our capital city in August at the greatest gathering of veterinarians the world has ever seen.

Every member of the A. V. M. A. whose address we have has been sent the report of our meeting for this year in which is an invitation to the A. V. M. A. meeting to be held next August.

Now *let's all get together and win the Army Bill fight*, then *all roads, steam, trolley*, and *auto, will lead to Indianapolis to see the "Hoosier way."*

E. M. BRONSON.
Hartford City, Ind.

[Doctor Bronson is correct, both Indiana, through his own efforts, and New York through the efforts of Dr. W. G. Hollingsworth, published annual reports of their veterinary meetings, prior to the Ohio publication referred to. Ohio, however,

while not the first to begin this policy has much to be proud of in the excellence of the "Ohio Veterinary Year Book," which is a more pretentious volume than either of the others, and in this Ohio has set the pace. It is difficult to understand how our versatile friend, "Doctor D. Arthur," could have made a "bull" of this nature. Possibly it may be accounted for by the earnestness which he has thrown into the work of pushing the army veterinary legislation before the present Congress having so occupied his time and attention as to make him oblivious of some of the veterinary progress that is being made. This may also account for the appearance, in this issue of the *Quarterly*, of a reprint from VETERINARY MEDICINE under the guise of an original article by a Georgian.

ILLINOIS STATE VETERINARY MEETING

The midsummer meeting of the Illinois State Veterinary Medical Association will be held at the State Farm at Springfield, July 9th, morning, afternoon and evening sessions. A good program has been prepared and the attendance promises to be large.

L. A. MERILLAT,
1827 Wabash Ave., *Secretary.*
Chicago. Ill.

FRENCH'S VERMICIDE CAPSULES

Replying to the inquiry of Dr. A. B. Byles (May issue) concerning the formula of the Vermicide Capsules marketed by Dr. Cecil French, Washington, D. C., the manufacturer of this remedy is not willing to divulge the formula at this time. The preparation is on market as a proprietary remedy and has a large sale. It is stated that the principal ingredient of this vermicide is not to be obtained on the shelves of any drug store.

Doctor French says that for the benefit of the profession at some future time he may publish the formula for his vermicide capsules which are the result of his extensive experience in the treatment of dogs and cats and have displaced all other vermifuges wherever tested.

ACUTE GASTRITIS IN DOGS

This disease is found most generally among the highest class of dogs. Poor or rather injudicious feeding appears to head the list of causes in this class. We may also consider the uses of strong medicines in the hands of a careless veterinarian or owner.

The symptoms are: Excessive thirst, prolonged vomiting spells between which the patient lies on his side stretched at full length and keeps up a low moan or whine and if forced to move the pain seems to be more intense.

The tongue is coated with a white mucous coat, the breath is bad, and the animal is cross, irritable, and prefers to remain in a quiet dark place.

The treatment differs with the cause, but as a rule give the animal an enema of warm water, then place in warm comfortable quarters and keep on a diet of meat broth and barley, dosing liberally with sodium sulphocarbolates and your prognosis may invariably be a favorable one.

BERT FRANKLIN.
Chicago, Ill.

FURTHER EVIDENCE FOR DOCTOR WILLIAMS

Replying to the exceptions taken by Dr. W. L. Williams (March Journal, page 105) to the diagnosis in the article which appeared in the January number, page 29, over my name, I would like to say: Had it occurred to me that I would be called upon to defend my position and "submit evidence," I would have been more complete in the details.

I wish to further add, that the question of hydramnios occurred to me after I had made the puncture, and to make a differential diagnosis from ascites, after about one-half the fluid had been drawn, I removed the canula from the body, and then re-inserted it without the aid of the trocar, using the same puncture, and when I reached the depth of the abdominal muscles

(slightly less than one inch) the flow began again as freely as before, which I think Doctor Williams will agree would not have occurred if it had been a case of hydramnios.

Also if further proof is needed: The second day, when I removed the fetal membranes by hand, the remaining fluid which I had not drawn on my first visit, was plainly in evidence in the abdominal cavity, which I think disposes of Doctor Williams' contention for hydramnios, as obviously the uterus was emptied at abortion.

W. C. VAN ALLSTYNE, M.D.C., V.S.
Veterinarian 7th Cavalry.
Fort Wm. McKinley, P. I.

THE COLORADO MEETING

The semi-annual meeting of the Colorado Veterinary Medical Association was held in Fort Collins, May 31st to June 1st. The program at this meeting was unusually good and an abundance of rare clinical material was provided. The Colorado meeting was one of the best held in the West.

The evening of the first day of the meeting the visiting veterinarians attended the annual banquet and ball of the Division of Veterinary Medicine of the Colorado State Agricultural College. This is one of the most brilliant affairs of the College commencement week.

COLORADO VETERINARIANS CO-OPERATE FOR THE STUDY OF NON-SPECIFIC DISEASES OF ANIMALS

Enclosed find the outlines of a cooperative research that is now being begun by the Colorado Veterinary Medical Association and the State Agricultural Experiment Station.

We think this investigation important and likely to result in valuable discoveries, and that we have enough enthusiasts among our membership to obtain some important results.

The letter and blanks enclosed have been forwarded to every member, and each is expected to do the best he can in filling up the sheets, and turning them in to our untiring secretary and pathologist, Dr. B. F. Kaupp.

The tendency of both the Bureau of Animal Industry and of the Experiment Stations has been in two directions, first the investigation of those diseases which may be classed broadly as transmissible, and second the preparation of infants' food for farmers. The great field of the non-specific non-transmissible diseases and of the problems that confront the practitioner every day, has been very lightly explored. Colleges, foreign army veterinary corps and commercial laboratories have contributed most of our recent advances in this class of work.

We have selected *azoturia* for the first investigation and expect to spend a number of years on the work: the practitioners will supply the cases and the experiment station will interpret them.

We hope that this is only a beginning, and that other state associations will select other clinical problems and work them out in like manner with the help of their stations.

A. W. WHITEHOUSE, D.V.S.
Chairman, Committee on Diseases.
Boulder, Colo.

—

The following is a condensed copy of the blank to be filled out:

COLORADO STATE VETERINARY MEDICAL ASSOCIATION

COMMITTEE ON DISEASE

Send all Reports to B. F. Kaupp, Fort Collins, Colo.

FORM I.—AZOTURIA

Veterinarian's name.....
Veterinarian's address.....
Case No.....
Owner's name.....
Owner's address.....
Description:
Color.....
Age.....
Sex (if mare, pregnant, barren or nursing)
Weight.....
Condition of flesh.....Type.....
Apparent breeding.....
Actual breeding.....
Pre-existing defects and unsoundness.....
Differences from fellows.....
Remarks.....
History: (A) Up to two weeks preceding attack.
Location.....
Housing.....
Usual feed: Grain.....Roughness.....
Grass.....Water.....

Usual work: Character.....
Regularity.....
Amount.....Duration.....
General health.....
Difference from fellows.....
Remarks.....
History: (B) From two weeks preceding, to, but not including day of attack.
Record any changes from (A) in:
Location.....Housing.....
Feed: Grain.....Roughness.....
Grass.....Water.....
Work.....
Cause of rest.....Duration.....
Feed during rest.....
General health.....
Difference from fellows.....
Remarks.....
History: (C) Day of attack; from when first seen until veterinarian arrives.
Feed.....
Water.....
Work.....
Health.....
Premonitories.....
Actual attack: Symptoms.....
Treatment: General.....
Urine: Passage (Voluntary or by catheterization. No. days necessary to catheterize.).....
Remarks.....
Amount.....
Physical appearance.....
Analysis (if you have no facilities, a fresh quantity is to be sent to Dr. Kaupp. Put 3 grs. chloral hydrate to 4 ozs. urine.)
Chemical: Sugar.....Albumin....Kind...
Acetone.....Diacetic acid.....
Bile.....Hemoglobin.....
Specific gravity.....Reaction.....
Microscopic, casts, epithelial.....
Granular.....Hyaline.....
Blood cells.....Pus cells.....
Blood: Smear on glass slide (very thin) stained with Wright's stain or Giemsa. Give source and send to above in case you do not have facilities.
Differential count:
Polymorphonuclear neutrophiles.....
Lymphocytes.....
Eosins.....Mast.....
Mononuclearleukocytes.....
Quantitative: Erythrocytes.....
Leukocytes.....
Complications.....
Autopsy: Date of death.....hr.....
Date of autopsy.....hr.....
Condition of carcass.....
External appearance after removal of skin.....
Thoracic cavity.....
Abdominal cavity.....
Remarks.....
Anatomical diagnosis.....
Note: Pieces two inches square of kidney, liver, muscle or any other lesion, to be placed in 10-percent formalin in fruit jar, and sent to Dr. B. F. Kaupp, Fort Collins, Colorado, for microscopic study.

RECORD OF RECOVERY

No. of days ill until returned to work.....
No. of days from attack to complete recovery....
No. of days of persistent lameness.....
Atrophy of muscles first observed.....
Days after attack.....
Disappeared.....
Remarks.....

DOES poly-bacterins, or other prophylactic serums ever cause abortion when used in pregnant females, especially mares? I saw a case where a large draft mare aborted at about mid-term after another practitioner had used a serum after opening a shoulder abscess or collar boil. The mare carried twin fetuses for about six weeks after they died. At the time of the abortion one was about the size of a half-grown bull terrier and the other was all absorbed except the bones.

JAMES A. WAUGH, V.S., D.V.M.
Pittsburgh, Pa.

ANSWER: No.—ED.

EXAMINATION FOR SOUNDNESS

1. Watch the horse in his own stall before he is moved.
2. Notice if the woodwork is gnawed or if kicked or if the horse paws in the stable. Disposition?
3. Will he roll while harnessed?
4. Does he crib or weave?
5. Is he irritable in stall while being groomed or when harnessed?
6. Will he bite or kick the attendant?
7. Does he object to being bridled?
8. Notice how he stands when at rest.
9. Move him from side to side in the stall, also make him back up.
10. Will he drink with the bit in his mouth?
11. Examine the eyes; note the age; the condition of teeth.
12. Examine *all* parts of the body for unsoundness of any part, notice general conformation.
13. Have him walked, trotted, galloped.
14. Auscultate the heart, lungs, larynx.
15. Test the wind.
16. Have him hitched and driven.
17. Is he a "line-gripper," a "side-liner," a stumbler?
18. Does he "forge," interfere, or run-away?
19. Will he stand while being hitched?
20. Will he stop when told to?

PROBABLE OVERSIGHTS

1. Hidden lameness, occult spavins, etc.
2. Epileptic fits, dummies, glanders, corns.
3. Sponges in the nostrils of roarers.
4. Recto-vaginal fistula.
5. Neurectomies, cryptorchids, etc.
6. Lolling tongue, churning of the lip, rubbing the head.
7. Jerking the head up and down; rubbing tail, etc.
8. Strong on bit; tearing the blanket; rolling in the harness.
9. Untying himself; resting one foot on the other.

CHINOSOL FOR WOUNDS

I like tincture of iodine in the wounds of joints and tendon sheaths, and Chinosol in wounds where neither a joint or sheath is involved. The wound in either case to be first cleaned with hydrogen peroxid or some preparation containing diluted cresylic acid.

No doubt in my mind but bacterins hasten recovery. I do not use it in the beginning, however.

J. H. DEDRICK, V.S.

Modoc, Ind.

"HEAVES" FORMULA CORRECTED

Dr. F. M. Starr, Odessa, Missouri, calls our attention to an error in the formula in his article on "The Treatment of 'Heaves'" published in the May issue of VETERINARY MEDICINE, page 198. The prescription called for digitalin instead of powdered digitalis as given, since six grains of the latter in this formula would constitute an exceedingly small dose. The formula should read:

Digitalin, powdered
Hyoscyamine sulphate
Strychnine arsenate, aa.....grs. 6
Aqua.....ozs. 6
M. Sig. One teaspoonful in the feed t. i. d.

Also:

Sodium arsenate.....grs. 6
Aqua.....ozs. 6
M. Sig. One teaspoonful in the drinking water t. i. d.

PURPURA HEMORRHAGICA

The earliest symptoms of this disease are very misleading; swelling of the limbs, with or without pain; but, as the disease becomes more pronounced pain becomes a certainty; sometimes the disease will first manifest itself by the appearance of petechial spots in the nostrils and dark colored extravasations of the mucous surfaces. The swelling of the breast which later works on back to the abdomen and sheath, occurs simultaneously with debilitating condition of the digestive organs. Owing to the altered condition of the blood, the lungs are the most affected, the large amount of effusion poured into them forms a caseous mass which adheres to the walls and prevents dilation of other parts of the lung. On autopsy I have found parts of the lung over-distended, and rupture of the air vesicles. My prognosis, when I find swelling of the head, is unfavorable, as I find the mortality greater in such cases than when absent. Hemorrhage into the intestinal canal quite often follows the foregoing symptoms. The kidneys are slightly congested and become rapidly worse from the smallest provocation, obstinate constipation is quite apt to ensue in early stages of the disease, but should cause no alarm. The rapid blood and tissue retrogressive changes are the greatest factors to overcome.

Nine out of ten of my cases occur in poorly lighted, unventilated and unclean stables; in my eleven years' practice where I had have good, clean, well ventilated places for my strangles and influenza patients, I never have had a case of purpura as a sequel.

Of the treatment of purpura I can say little. Each case is almost a disease by itself, but let me quote from *Abbott's Digest of Active Principles for 1912*, "CLEAN OUT, CLEAN UP AND KEEP CLEAN." If we will strictly adhere to this, we will find it a big factor in saving cases. I have had excellent success with *NUCLEIN* conjoined with *chlorate of potash.* Of the

chlorate I give one and one-half ounces in the 24 hours.

The *Iodine* treatment seems to be gaining favor and I have good success with it in some cases. For the intratracheal injection I use, iodine, six grains; iodide of potassium, ten grains; water one ounce; the whole to be injected at once and be followed by one-half of this amount every four or six hours.

For the swelling of the head, cold sponging alternated with warm water. In closing allow me to repeat: remove the patient to a good clean place. Give plenty of fresh air, and keep clean, and you will have better success in the treatment of this disease than you will where these precautions are not observed.

RALPH ELLIS, V.S.

Odessa, Wash.

THE ACTION OF SODIUM NUCLEINATE

Lassen reports in his "Doctor-Dissertation" (Berlin, 1911) upon the results of his investigations in dogs with sodium nucleinate. Hypodermic injection of the drug was always followed by a decided hyperleukocytosis, both in healthy and in sick animals. While in very severe cases of distemper, the nuclein did not alter the course of the disease; lighter cases were favorably influenced. The author found that the remedy exerts a reliable prophylactic action.

THE BEST APPLIANCE FOR CASTING

To young practitioners who are about to purchase an outfit, will say, you can make no mistake in selecting a Knowl's casting harness. I have used one in my practice the past twelve years. Can truly say it is one of the best appliances on the market today. It is compact, light and strong, easy to handle, and will not fail you at the critical moment.

J. V. KATZENBERGER, D.V.S.

Garfield, Wash.

HAS NO STANDING WITH VETERINARIAN

I would like to find out through the JOURNAL, what virtues Cutler's Blood Pure Powders have. It is said to cure fistula without any external treatment.

E. C. W. S.

CHICAGO MILK STATISTICS

There are 1,200 milk depots in Chicago.

There are 3,500 stores in Chicago that retail milk.

There are 12,000 dairy farms that supply milk to Chicago.

More than 32,000 eight-gallon cans of milk are used in Chicago daily.

Chicago pays more than $80,000 daily for milk.

A HOTBED OF DISEASE

Dr. Hal C. Simpson, acting in the capacity of assistant state veterinarian, was called to Turin, Mapleton and other places recently to investigate reasons for an Omaha commission firm condemning a shipment of fifty-two head of hogs. The doctor found cattle yards of an astonishing nature, breeding disease to every hog on the place, as the chief reason, and so made his report.—*Denison* (Ia.) *Review.*

CRUMBAUGH-BRANSON

Dr. L. W. Crumbaugh, a veterinarian of Craig, Neb., was married May 15th, to Miss Anna Dorothy Branson. The wedding took place at the home of the bride in Craig and the young people will continue to live in that city, where Dr. Crumbaugh is enjoying an excellent practice in his profession. Dr. and Mrs. Crumbaugh will visit here in the near future.

—*Hamilton* (Mo.) *Advocate.*

DR. ADOLPH EICHHORN, Senior Pathologist of the Bureau of Animal Industry, Washington, D. C., steamed June 28th for Europe. He is the leader of an agricultural tour organized by the Bureau of University Travel and will be gone the entire summer.

What is the best dressing for a broken leg, when the patient is a horse?

—

WHAT is the matter with hogs that are more or less paralyzed behind but show no other symptoms of cholera?

—

WILL some one please state that they have positively cured a case of tetanus with antitetanic serum?

—

WHAT percentage of the cases of anthrax observed by you during the year, occur in winter. When occurring in the winter season, what form does the disease usually assume?

WHAT is mountain fever?

—

GIVE a successful treatment for summer sores.

—

WHAT is the quickest way to diagnose hog cholera?

—

WHAT is a fair compensation for administering anti-hog cholera serum?

—

WHY not use antistreptococcic serum at the time of doing a major operation instead of the bacterins?

—

WHY cannot a state veterinarian deputize any qualified veterinarian to examine stock for interstate shipment?

—

Is it ethical and is it profitable to issue calendars to your clients and others, advertising yourself and your profession?

—

DOES sun-stroke differ from heat prostration in that the animal becomes unconscious. What is a rational treatment for each condition?

—

WHAT is the best method of extracting an inferior molar tooth with a large osseous enlargement on the ramus of jaw caused by a previous ulcerated condition?

—

WHAT success have you had in the treatment of tetanus in the horse with antitetanic serum? What do you consider a proper immunizing dose of serum, 500 units, or 1500 units?

—

WHICH do you consider the most reliable diagnostic agent for the detection of glanders in its latent or occult form: Mallein, the agglutination test, or the compliment fixation test of Schutz and Schubert? Is it not a fact, that mallein will at times cause a reaction where glanders does not exist?

—

DO YOU consider influenza antitoxin a preventive against equine influenza? What size doses do you use, and how often do you repeat it? Do you consider it possible that a horse could be inoculated with some other disease by the use of this serum? Say, pernicious anemia, contagious pneumonia, etc.? Do you consider this serum a curative agent when equine influenza is fully developed?

—

LEBANON VETERINARY SURGEON MARRIED

Dr. Charles C. Wright, of Lebanon, and Miss Jennie Rebecca Morehead, of Sweet Home, were united in marriage June 11 in this city.

Doctor Wright is a veterinarian and has made his home in Lebanon for several years past. The bride is the second oldest daughter of Mr. and Mrs. R. W. Moorehead of Sweet Home, and is held in high esteem by a large circle of friends.

—*Albany* (Oregon) *Democrat.*

A NEW WEBSTER—A NEW CREATION

The space saving device that at once strikes the eye in Webster's New International Dictionary is the division of every page of the vocabulary into two sections, the more important and familiar words being given above, and the less important or unfamiliar in smaller type below. *The Chicago Record-Herald* calls this "a stroke of genius," and President Jordan of Leland Stanford Jr. University wonders that "publishers of lexicons have not used it before." Very little experience in using the book will prove that this arrangement increases ease of consultation even more than it saves space.

The pictorial illustrations in this book have been selected and executed with an eye primarily for the clear explication of the term under treatment, and not for mere display. Those retained from the old International have been carefully verified, and many additions have been made, increasing the total to about 6,000.

VETERINARIAN KILLED BY A COWARD

Dr. E. M. Herrin, Edwardsville, Illinois, was murdered May 22 while operating on a horse. His assailant struck the Doctor from behind with a heavy club and without a word of warning because he was operating on a horse in the street in front of his, the assailant's, house. Doctor Herrin was popular in his community, and a heavy guard was placed over the murderer to prevent mob violence, which was feared.

THE "SIMPLICITY" BEST

The "Simplicity" Veterinary Operating Table arrived in good shape, and I have used it twelve times; once for a case of abdominal cryptorchidism. The operation was successful, and the table certainly worked to perfection.

I consider the "Simplicity" superior to any other veterinary operating table that I have ever seen, and cheerfully endorse everything that the Freeland Brothers of Marion, Kansas, said for the table in the May number of the AMERICAN JOUR-

NAL OF VETERINARY MEDICINE; in fact, I can not say too much in its praise.—F. FULLER PEET.

This is along the same line and tone of praise as those which we receive daily from the many satisfied customers who are buying our hospital supplies. Why not add your name to this satisfied list? "Better to have than to wish."

VETERINARY SPECIALTY MFG. CO.
Grand Rapids, Mich.

FOR POSITION OF VETERINARIAN

Among the candidates who passed the competitive civil service examination at Albany recently for the position of veterinarian in the State Agricultural Department, at a salary of from $5 to $7 a day and expenses, are the following: James H. Hewitt of Morrisville, Frank I. Baker of Gouverneur, and Roy Rowe, 859 Main Street, Little Falls.
—*Attica* (N. Y.) *Dispatch.*

EIGHT PASS "VET" EXAMINATION

An examination was held last week in St. Louis for men who intend to practice veterinary medicine in Missouri. Seventeen took the examination, eight of whom were students and graduates of the College of Agriculture of the University of Missouri. Nine were from special veterinary schools.

Eight passed the examination, five of whom were University of Missouri students and three students from the other schools. Those from the College of Agriculture were J. B. Latshaw, S. W. Roberts, F. C. Streeter, T. T. Tucker and C. D. Wilson.—*Columbia* (Mo.)*Herald.*

THREE GIVEN LICENSES

Three candidates for veterinarians' licenses were examined by the state examining board of veterinarians Wednesday at the capitol. Dr. John Scott of Peoria is chairman of the board and Drs. A. C. Worms of Chicago and C. H. Merrick of Okawville are the other three members.

The meeting in which the examinations were conducted was the quarterly session of the board, held under the auspices of the state live-stock commission.—*Springfield* (Ill.) *Journal.*

HORSE DOCTORS ACTIVE

A number of veterinary surgeons who have been attending the committee meeting of the State Legislative Association of Veterinarians at Stillwater, will introduce a bill in the next legislature to protect the live-stock grower from the unregistered veterinary. Dr. E. A. Dean, of Guthrie, is the chairman; Dr. C. E. Steel, of Oklahoma City, Dr. D. F. Hall, of Holdenville, and Dr. L. R. Smith, of Enid, assisted Dr. Dean in performing an operation on a horse here today.
—*Capital*, Guthrie, Okla.

CORRECTED FORMULA FOR EUCAMPHINE

The formula for "Eucamphine" as given in the May issue of VETERINARY MEDICINE is incorrect, if you have reference to our make of Eucamphine, and I know of no other widely advertised to veterinarians. The quantities of the leading ingredients as given in VETERINARY MEDICINE are ridiculously small. In Eucamphine we use 10 percent of the finest eucalyptus oil and 25 percent of the best camphor oil instead of only 5 percent of each of these two articles, as suggested in the formula that you publish.

HAROLD SORBY.
Manager Sorby Vaccine Co.
Chicago, Ill.

WILL KILL 1,000,000 FLIES

The following formula for a fly poison is given by the Chicago health bulletin:

Formalin	4 drams
Sugar	4 drams
Milk	1 pint
Water	1 pint

Mix and pour enough on a piece of bread to thoroughly saturate it. Place where flies swarm.

A VALUABLE LIBRARY VOLUME

I wish to say for "Spring-time Surgery" that I am proud of it and consider it a valuable addition to my small library.

True, I have read the majority of the articles therein at different times, but the fact that a class of articles grouped as you have done is much more quickly found for reference than if they are scattered through different publications, makes this book a valuable one.

I hope more of this sort of compilations will come from the same source.

E. M. BRONSON.
Hartford City, Ind.

AUTOMOBILE HAS HURT CITY VETERINARIAN

The automobile is hurting the practice of doctors of veterinary medicine in the cities, according to Dr. Veranus A. Moore head of the State College of Veterinary at Cornell University.

"In the country, however," he says, "the demand for veterinarians is growing rapidly. The price of farm horses is steadily increasing. Food-producing animals are commanding prices that warrant expenditures for their treatment which formerly were not considered worth while.

"The inspection of dairy cattle is being required by many boards of health, and this is increasing the veterinary's sanitary work. The simple fact that a good cow is worth as much as a good horse was formerly, and a good dog brings as much or more than a cow would have sold for ten years ago, is bringing owners of animals to a realization of the value of veterinary service. We are constantly receiving requests from country places for a veterinarian.

"The change in veterinary practice caused by the automobile has come coincidently with the increased value of food-producing animals. Thus the total demand for the veterinarians has not lessened, but the conditions have created a demand for men skilled in the diseases of all species of domesticated animals rather than those of the horse only."
—*Bangor* (Me.) *Com'l.*

KENTUCKY STATE VETERINARIAN RESIGNS

Dr. E. T. Eisenman, of Louisville, Kentucky, after holding the office of state veterinarian and veterinarian to the State Board of Health for the past twenty years, has resigned.

In accepting his resignation the State Board of Health expresses its cordial appreciation of him "as a man, as a scientific veterinarian and as a most conscientious and faithful official."

ANNUAL MEETING OF THE VIRGINIA ASSOCIATION

The Virginia State Veterinary Medical Association will hold its next annual meeting at Newport News, July 11 and 12. Dr. Geo. C. Faville, North Emporia, is secretary.

MISSOURI VETERINARY MEETING

The next annual meeting of the Missouri State Veterinary meeting will be held in Marshall, July, 29th and 30th. The rejuvenated Missouri Association will have a good meeting this year. Dr. S. Stewart, Kansas City, is secretary.

The following program has already been announced and more will be added later:

Snap Shots by a Beginner in Practice, by Dr. D. F. Luckey, Bloomfield, Mo.; Common Animal Parasites Found in Missouri (lantern illustrations), by Dr. A. T. Kinsley, Kansas City, Mo.; Death of Mules Due to Parasitism, by Dr. Horace Bradley, Windsor, Mo.; My Experience in Immunizing Against Hog Cholera, by Dr. F. M. Starr, Odessa, Mo.; Removal of Urinary Calculi, by Dr. H. J. MacCartney, Joplin, Mo.; Canine Practice, by Dr. J. C. Flynn; Address by Dr. J. W. Connaway,

VETERINARY OBSTETRICS

INCLUDING THE

Diseases of Breeding Animals and of the New-Born

By W. L. WILLIAMS

Professor of Surgery and Obstetrics in the New York State Veterinary College at Cornell University, Ithaca, N. Y.

Over 1100 pages with 158 illustrations. $8.00 net postpaid

In announcing the publication of Veterinary Obstetrics, including the Diseases of Breeding Animals and of the New-Born, we desire to draw special attention to the extensive chapters upon the "Accidents of Coition," the "Infections of Coition," or venereal diseases, and "Sterility." The "Accidents of Coition," have not previously, to our knowledge been described as a group.

In general it has been aimed to give a comprehensive, practical consideration to the subject of obstetrics and the diseases and accidents closely allied to breeding.

"There can be but one voice among us all, to say that 'Veterinary Obstetrics' is a most valuable addition to the literature on the subject, one of which the veterinary profession of America can be proud."—*Dr. A. Liautard, Am. Vet. Review.*

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Columbia, Mo. Reports of cases: Dr. Carl F. Fischer, Garden City, Mo.; Dr. W. E. Neil, Kirksville, Mo.; Dr. Oscar Stuart, Paris, Mo.

The meeting will open at 9:00 a. m. Monday, July 29, and a banquet will be served in the evening at the Elk's Home. In addition to the literary program a clinic will be held at the hospital of Drs. Welch and Blosser on Tuesday. We are looking forward to a very successful meeting, one of which the profession of Missouri will be proud.

"Springtime Surgery" came O.K. Many thanks, I like it very much.

W. F. BROWN.

Weeks Mills, Me.

GLANDERS SPREADS

Fatal Disease Claims Hundreds of Brooklyn Horses—Still Unchecked—Reports are Alarming—Danger to Human Beings, Says Doctor Maxfield, From Extremely Contagious Malady.

The following table, prepared for *The Eagle* by T. R. Maxfield, M.D., assistant sanitary superintendent of the Brooklyn Branch of the Board of Health, indicates the increase in the number of cases of glanders during 1910, 1911, and for the first quarter of 1912:

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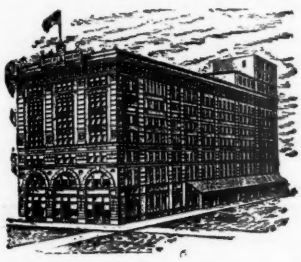

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CHICAGO, ILLINOIS

Year	Horses Examined	De-stroyed
1910	2,030	268
1911	1,555	313
1910, first quarter	656	78
1911, first quarter	284	46
1912, first quarter	752	142

"Glanders, or farcy, a disease of a highly contagious character and fatal to horses as well as humans, is dangerously on the increase, despite all efforts of the Department of Health to check it," said T. R. Maxfield, M.D., assistant sanitary superintendent, to a reporter for *The Eagle*. "Our two veterinarians are constantly on the go, and the utmost precautions are taken to stamp out, or at least check this fatal disease. During the first quarter for 1912, or ending March 31, you will note

J. HARVEY SLATER, D. V. S., Pres. and Lab. Supervisor. S. A. SLATER, Secy.-Tre...

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Every practitioner should secure a copy for study and reference. **PRICE $3.75**

that of the 752 horses examined 142 were found suffering from glanders—much too large a percentage. An epizootic? The figures speak for themselves."—*Brooklyn* (N. Y.) *Eagle.*

QUITS PRACTICE FOR FARM

Dr. Clarence Booker has sold out his veterinary practice in Alton and has bought a 200-acre farm in Missouri to which he will give his future attention.—*Argus*, Greenfield, Ill.

DR. YOUNG SENDS IN HIS RESIGNATION

G. R. Young, city veterinarian, has forwarded his resignation to the city commissioners. His resignation is as follows:

"*To the Newly-Elected City Commissioners:*

GENTLEMEN: I herewith tender my resignation as city veterinarian.

"I did not know, under the new form of government which of you had the authority, or I would have forwarded same earlier.

"My connection with the Citizens' union movement and their candidates warrant me in doing this, and I have no apologies to make or favors to ask.

"My relations with the chiefs and men of the Omaha fire department have been most cordial, and it is with regret that I sever my connection with them.

"I remain, gentlemen, yours for a greater and more progressive Omaha,

G. R. YOUNG, D.V.S.,
City and Assistant State Veterinarian."
—*Omaha* (Neb.) *News.*

The VETERINARY NEWS

LONDON, ENGLAND

A Weekly Journal of British and Foreign Veterinary Medicine, Surgery, Pharmacology, Therapeutics, and Sanitary Science.

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Professor in the Royal Veterinary College, London

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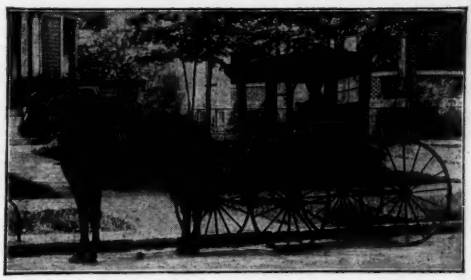

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